museum
QL
671
W75
copy 2

Vol. XLIII MARCH, 1931 No. 1

THE WILSON BULLETIN

A Magazine of Field Ornithology

Published by the
WILSON ORNITHOLOGICAL CLUB
at
SIOUX CITY, IOWA

Entered as Second-class Mail Matter, July 13, 1916, at the Postoffice at Sioux City, Iowa, under Act of March 3, 1879.

CONTENTS

Nesting of the Duck Hawk in Tennessee	By Albert F. Ganier	3-8
A Preliminary Report on the Influence of Light Intensity upon the Time of Ending of the Evening Song of the Robin and Mockingbird	By Jesse M. Shaver and Miss Ruby Walker	9-18
The Soaring of Raptorial Birds	By R. H. Palmer	18-24
Quartering Flight in Migration	By E. C. Hoffman	24-27
Control of Insects by Birds	By W. L. McAtee	28-29
Migration of Cananda Geese from the Jack Miner Sanctuary and Banding Operations	By Manly F. Miner	29-34
The Ridgway Memorial Completed	By Harry C. Oberholser	35-36
Notes on the Breeding Birds of State College, Center County, Pennsylvania	By Thos. D. Burleigh	37-54
Editorial		55-57
General Notes		58-65
Proceedings		66-89

THE WILSON BULLETIN

Published quarterly, in March, June, September, and December, as the official organ of the Wilson Ornithological Club, at Sioux City, Iowa.

The current issue of the Wilson Bulletin is printed by the Verstegen Printing Company, Sioux City, Iowa.

The Wilson Bulletin is sent to all members not in arrears for dues. The subscription price is $1.50 a year, invariably in advance, in the United States. Outside of the United States the subscription rate is $2.00. European Agents, Dulau and Company, Ltd., 34-36 Margaret St., Oxford Circus, London, W. 1., England.

All articles and communications for publication, books and publications for notice, and exchanges, should be addressed to the Editor.

New subscriptions, changes of address, and applications for membership should be addressed to the Secretary. Personal items, news of events in the scientific world, and other notes suitable for our "Notes Here and There" department may also be addressed to the Secretary.

Claims for lost and undelivered copies of the magazine may be addressed to the Editor.

THE WILSON ORNITHOLOGICAL CLUB

Founded December 3, 1888. Named after Alexander Wilson, the first American ornithologist, and called the "Father of American Ornithology."

The officers for the current year are:

President—Prof. J. W. Stack, M. S. C., East Lansing, Mich.
Vice-President—Mr. George Miksch Sutton, Bethany, W. Va.
Treasurer—Mr. W. M. Rosene, Ogden, Iowa.
Secretary—Prof. Jesse M. Shaver, Peabody College, Nashville, Tenn.
Editor—T. C. Stephens, Sioux City, Iowa.

The membership dues are—Sustaining membership, $5.00; active membership, $2.50; associate membership, $1.50 per year.

The following societies are affiliated organizations:

The Nebraska Ornithologists' Union.
The Iowa Ornithologists' Union.
The Kentucky Ornithological Society.
The Tennessee Ornithological Society.

THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY

Published by the Wilson Ornithological Club

Vol. XLIII MARCH, 1931 No. 1

Vol. XXXVIII (New Series) Whole Number 154

NESTING OF THE DUCK HAWK IN TENNESSEE

BY ALBERT F. GANIER

If one were asked to name the most spectacular and romantic of our native birds he might readily defend the choice of the Duck Hawk, our counterpart of the Peregrine Falcon, that most favored bird among the falconers of mediaeval Europe. At one time widely distributed throughout the United States, this bird, chiefly through boldness in defense of its nest, has become nearly exterminated in all that area which lies between New England and the Rockies. A bold brigand, a courageous parent, a paragon in the art of flight, trim and handsome, he is a proud untamed aborigine making his last stand in the very few rugged unsettled places that remain in our land.

On April 7, 1929, I discovered a nest of the Peregrine Falcon (*Falco peregrinus anatum*) in a cliff on the slope of Mt. LeConte, in the Great Smoky Mountains near Gatlinburg, Tennessee. The nest contained three eggs which I succeeded in collecting with the aid of a rope ladder and the assistance of Mr. Brockway Crouch of Knoxville, who accompanied me. In preparing the eggs I found that incubation was advanced, varying from 14 to 17 days; therefore, the bird had evidently begun to set about March 20 with the laying of the first egg.

The site was in the Devil's Backbone cliff, a promontory or comb with a sheer drop of 150 feet on one side, nearly vertical on the other and having practically no width at its apex. This site had been in use for years no doubt and was first found by me on May 31, 1925, at which time there were unmistakable evidences of occupation. A shelf about twelve feet long and fifteen feet below the top, on the vertical side, was chosen. It was triangle shaped, about five feet wide at the center, at which point there was a little cave-like pocket, while at the ends it feathered out to nothing and so was inaccessible to prowling animals. A few small bushes grew at either end of the shelf and also some rank grass, now prostrate and dry. The surface was covered by fine shale and in a depression in this material, near the center and a foot from the wall, the three eggs were found. There were bits of

down from the bird's body as well as numerous feathers of such small birds as robins, thrushes, jays, and juncos, scattered about the shelf. By the eggs were two pellets composed of hair and feathers and measuring $\frac{3}{4}$x2$\frac{1}{4}$ inches. There were four or five deposits of white excreta near the nest and also on nearby sheltered ledges, where the birds were in the habit of perching or roosting. On the top of the rocky backbone of the cliff there was no growth except occasional clumps of sand myrtle and here also were found pellets, excreta, and feathers The vertebra of a small snake was on the nesting ledge.

The conduct of the falcons about the nest was similar to that described by other observers. Our first view of them was from the forest 600 feet below, when the two were seen flying about the cliff. One of the birds finally began to fly in closely, with rapid beating wings, and a moment later I saw her alight on the nesting shelf. An hour's climbing through the jungle of laurel and rhododendron brought us out on top of the backbone which we followed in approaching the nesting site, keeping a close lookout the while for the departure of the sitting bird. The male had in the meantime disappeared. I stationed myself sixty feet from the shelf while my companion advanced to a point immediately above the brooding female. He struck the cliff face with a rock but the bird, hidden from sight, did not leave. He then pushed off a lump of loose shale with his foot and as it fell on the ledge, the sitting bird launched herself into space with rapid wing beats. She immediately began her cackling alarm notes and was joined, in less than a minute, by the male, a smaller bird. He remained high and did not join in the demonstration, leaving the scene in about five minutes. A short while later he returned for a few moments and then did not re-appear during the hour we were about the nest.

We tied the rope ladder to rhododendron bushes and went "over the top," seating ourselves a few feet from the eggs. All this time the female, which had been keeping up her demonstrations, now became more violent. She would approach from above with half folded wings, darting straight toward us but swerving suddenly upward or sideways when from forty to eighty feet away. The swish of her wings could be heard plainly as she turned, and her flight at this time was inconceivably rapid, making an audible roar. With a Leitz Leica camera, f. 3.5 lens and shutter set at 1/500 second, we made a number of pictures of the bird in flight. With different adjustments I photographed the nest with eggs and later photographed the cliff from different points. The falcon's contrasting head markings, the black tail, the slaty back and the black and white breast bars, were plainly visible.

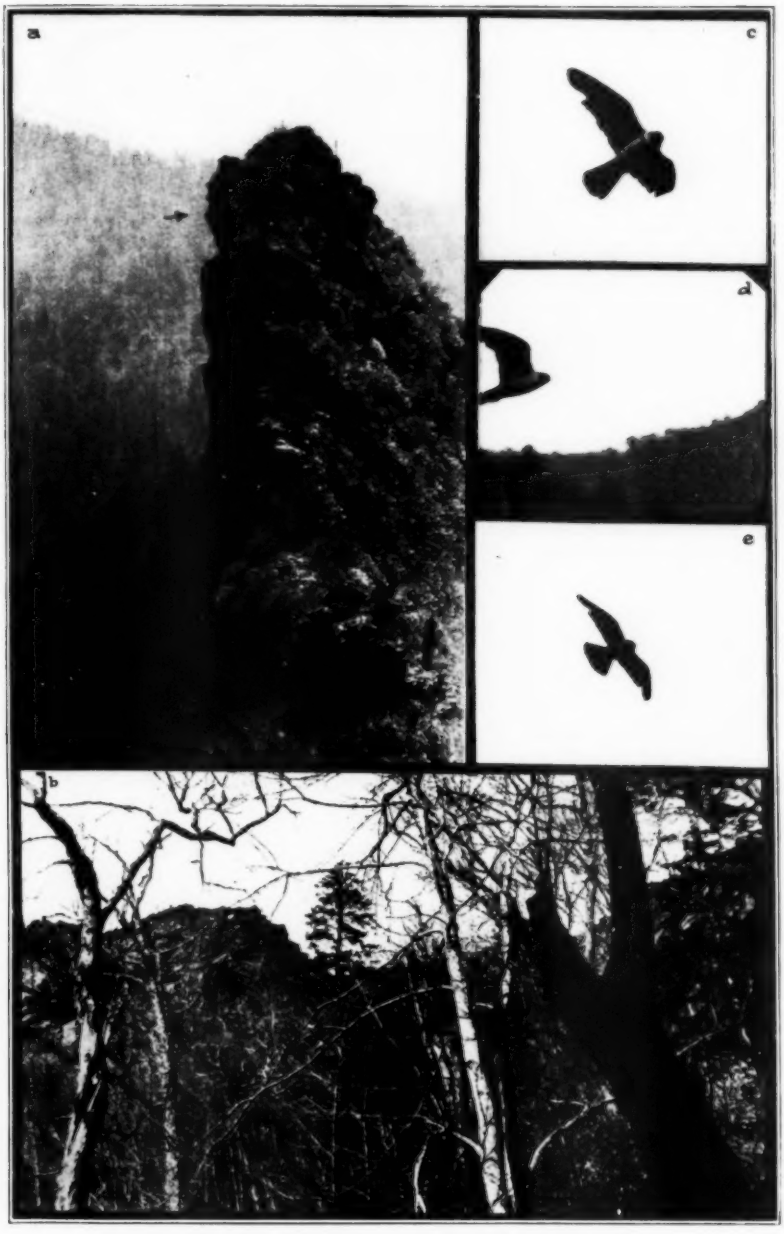

FIG. 1. Nesting crag of the Duck Hawk in the Great Smoky Mountains. a, Profile of cliff. b, Broadside of cliff from 500 feet below. c, d, and e, Duck Hawk in flight, at about 50 feet.

After half an hour the female sought rest on the top of a dead spruce across the canyon, 1,000 feet away, and during the last fifteen minutes of our stay she remained on this perch.

The most easily discernable field marks of the bird in flight were noted to be the pointed wings bent at the elbows, the rather long tail with rounded tips and the large club feet drawn up close under the tail. The eggs, which I collected, are considerably longer than the average. They measure in inches, 2.32x1.61, 2.26x1.67, and 2.21x1.66, averaging 2.26x1.65. Bendire gives the average of sixty-one specimens as 2.06x1.61. Darker markings of rufous overlie a lighter brick red under color but this does not entirely cover the creamy ground and therefore makes this set unusually handsome.

On May 24, 1928, a friend noted these birds noisily circling about the site and got the impression that there were three of them. Two weeks later I visited the site and observed two of the falcons going through their splendid aerial evolutions. For lack of time I did not try to locate the nest on that visit and it is probable that the young had already taken flight.

On the morning of March 30, 1930, I found myself on an escarpment of the Cumberland Mountains looking down, some 800 feet, into the wooded gorge of two tumbling mountain streams which a little further down emptied their waters into the Collins River. This was in Grundy County, Tennessee, some 125 miles west of the Smoky Mountains site. The sandstone cliff on which I stood, "The Point", was that in which I had located an eyrie of the Duck Hawk on May 29, 1922, a description of which will be found in WILSON BULLETIN for March, 1923, page 26.

The birds were not at home, so our party, consisting of Messrs. Mayfield, Monk, Sharp, my son, and myself, began a systematic search of the cliffs which stretched in an unbroken line as far as we could see, keeping a lookout into the half mile wide canyon for falcons on the wing. At one o'clock we decided to lunch at a spring and while my companions were preparing the "grub" I pushed on a quarter mile farther and had the good fortune to flush a male Duck Hawk from a dead limb overhanging the cliff. After a circuitous five minute flight he resumed his perch while I rejoined the party to break the good news.

On our return a short while later the male was still at his post and a few moments after the female flew from her nest, when we had taken a position where we could look across at her from a point about 150 feet away. This nest was unusual, in that the eggs were laid in an old nest of the Red-tailed Hawk built in a recess in the cliff some

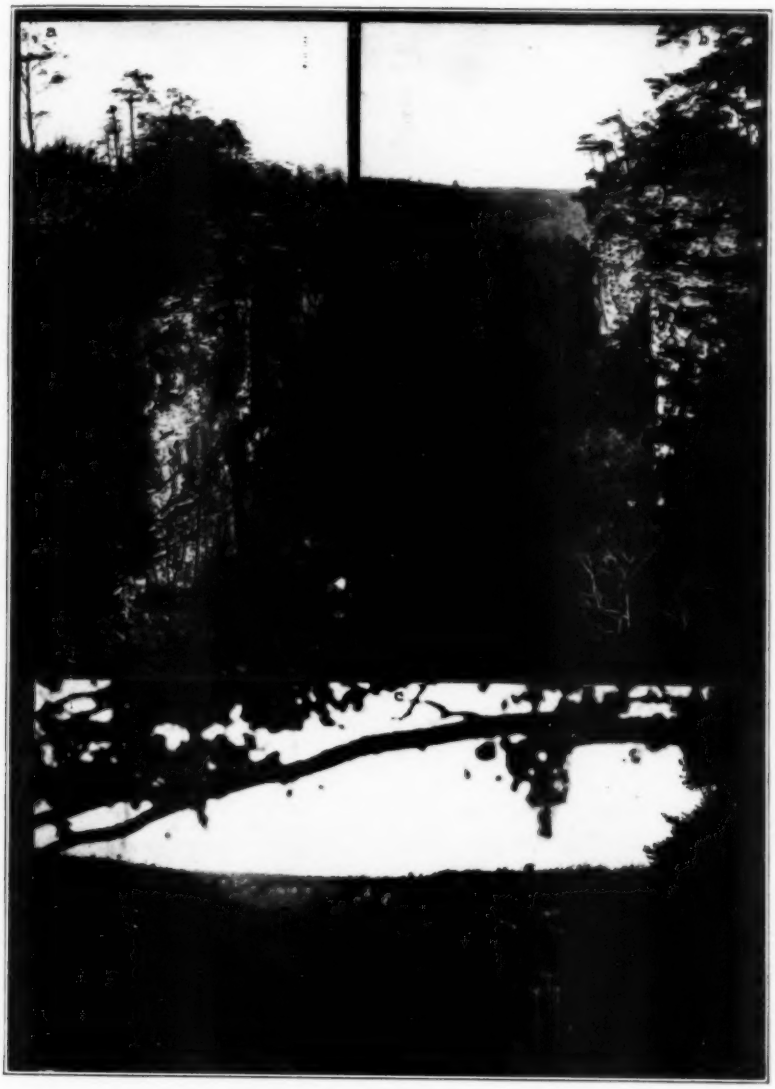

FIG. 2. Nesting cliff of Duck Hawks in the Cumberland Mountains of Tennessee. a, Cliff from the west. b. Cliff from east. c, "Valley of the Peregrines".

ninety feet from the bottom and twenty feet from the top. The brow of the cliff projected about ten feet beyond the nesting ledge and so, even with our rope ladder, we were unable to reach the eyrie. The nesting site is shown in the accompanying illustration. These birds were not nearly so bold as the pair previously described and while both birds remained nearby, in the air, at no time did they dart closer than 150 feet from us. They maintained their cackling notes more or less continuously. On re-visiting the nest a week later it was observed to contain three downy white young nearly a week old. From this it would appear that incubation of the eggs began about March 10. The parent birds were no more bold on this trip than before. From a squirrel hunter, who frequented this cove and who had known of the birds for years, I learned that this pair had nested at the present site for six years, having moved from "The Point" eyrie, a mile away, in 1924. He stated that the latter eyrie had been used prior to 1924 for five or six years to his knowledge. He had never shot at the birds and promised he would endeavor to protect them. Their isolation, some three miles from a good road and two miles from a habitation, will assist in their preservation. He did not know of another pair in the vicinity.

The ledges about both of these eyries, as well as the one in The Smokies, were well marked by white excreta and this serves as an apparently unfailing method of locating a nesting site, at least, one that has been in use for some time.

The pair of Red-tailed Hawks which furnished the nest have definitely formed the cliff nesting habit. In May, 1922, I found their nest with small young a half mile west of "The Point", while in 1930 their nest was found a quarter mile north of it, both being on inaccessible ledges of the cliff.

A nest of the Duck Hawk was found April 4, 1893, by William Wake, three miles below Knoxville in a cliff, the base of which is washed by the waters of the Tennessee River. This nest contained three eggs with incubation well advanced and with measurements averaging 2.15x1.73. (See *Museum*, Vol. 1, No. 3). I am unable to find published records of any other nests having been found in the southern states, although it has been observed at breeding season in a number of places in the Appalachian Mountains. I have searched diligently in many likely localities, but have been unable to locate other breeding pairs than those I have mentioned.

Nashville, Tenn.

A PRELIMINARY REPORT ON THE INFLUENCE OF LIGHT INTENSITY UPON THE TIME OF ENDING OF THE EVENING SONG OF THE ROBIN AND MOCKINGBIRD[1]

BY JESSE M. SHAVER AND MISS RUBY WALKER

The very great importance of transition areas has long been recognized in animal ecology, but relatively little attention has been paid to transition intervals of time such as those between night and day.

The very great need of exact studies of the transition interval between day and night is well indicated by Elton (1927, page 89). He says that "A careful study of the changes in external conditions during the day and night with reference to corresponding changes in the activities of animals is very badly wanted, for our ignorance of the matter is profound. It is remarkable to reflect that no one really knows why rabbits come out to feed only at certain times, and at different times on different days . . . and yet rabbits are common animals and of great practical importance, and millions of people have watched their habits. We do not know whether light, temperature, humidity, or something else determines the appearance and retirement of animals at certain times."

All that Elton says about rabbits is equally true of birds. Some birds, as owls, come out only at night and retire early in the morning while most birds are active during the daytime and retire at nightfall. This last is true of most of our song birds. In studying this interval when day passes into night, bird activities are most useful and especially bird song since it may be recorded even when it is too dark to see the bird. Furthermore the song sung near sunset—called in this paper the evening song—has been shown by Shaver and Miss Gladys Walker (1930) to be highly correlated with sunset time in the case of the Mockingbird and to have a sharp end point. This makes this particular song well-fitted for study.

Many possible weather factors are changing rather rapidly during the twilight period and conceivably might be causally related to the time of ending of the evening song of diurnal species. The scanty literature on this subject indicates that light is one of the most important of these factors.

In 1916 and again in 1924, Haecker reported on studies of the relation between light and the time of beginning song in the morning and the time of song ending in the evening. In his first study (1916),

[1]Read by the senior author before the Ecological Society of America at the Des Moines meeting, December 30, 1929.

sunlight intensity was investigated both subjectively and objectively. In collecting his objective data on light, he used a crude apparatus consisting of a bar with a piece of spectacle glass at one end for an eye-piece and a sliding plate containing letters of a certain height at the other end. He moved this plate back and forth using the distance at which he could read the letters as the relative measure of the light intensity at the time that a bird began singing. His conclusions were that there is a definite and high correlation between the time of beginning song and the light intensity.

Later Haecker (1924) made observations on the evening song of birds. Light summation of the hours of sunshine per day was made and used as well as the data on light intensity. The light was measured photometrically. This work confirmed his earlier results on the very great importance of light in determining the time that birds quit singing in the evening. However, he found that the evening song began in much stronger light than the morning song but it also ended when more light existed than at the beginning of the morning song.

Schwan, according to Walker (1928) used more accurate methods of measuring light but secured quite similar results in the case of the awakening song.

Dorno (1924) repeated a part of Haecker's work and came to the conclusion that light was significant, but that the variation in the time between the beginning of the morning song and sunrise was due to differences in dispersal of light rays rather than the actual intensity of the light present. He is of the opinion that this dispersal is due to the latitude of the region and season of the year.

Walker (1928) in Tennessee made a study of the relation of light intensity to the awakening song of birds. The study was at first subjective, in that the weather was estimated as clear, cloudy, foggy, or smoky and later objective in that the Macbeth illuminometer was used for measuring light intensity in foot-candles.

Her findings seem to indicate that the length of time before sunrise at which a bird begins singing is probably dependent on the total amount of light present when measured in foot-candles but to a very great extent on other weather factors also.

Knowledge of the above results caused light intensity to be selected for this investigation. It seemed best not only to study one single factor, such as light, at a time, but to limit the first studies to a single species or, at most, to a very few species in order to simplify analysis. A permanent resident, the Mockingbird, and a summer resident, the Robin, were selected. Thus the problem involved the rela-

tion between the time of ending of the evening song of the Robin and of the Mockingbird, and light intensity.

Observations were made beginning February 1, 1929, and extending through May 7, 1929; a total of 53 evenings being spent in this way, distributed rather uniformly over each month as follows: 12 in February, 16 in March, 19 in April, and 6 in May.

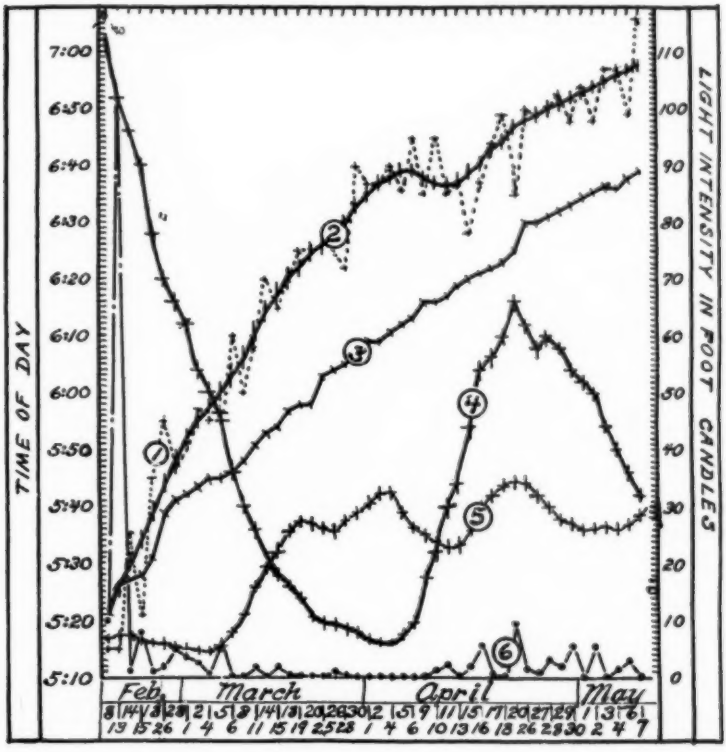

FIG. 3. A Comparison of the Time of Ending of the Evening Song of the Robin with Sunset and with Light Intensity. The numbered curves represent: 1, actual time of the ending of the evening song; 2, smoothed time of ending of the evening song; 3, time of sunset; 4, smoothed light intensity at the time of ending of the evening song; 5, smoothed light intensity at sunset; 6, actual light intensity at the time of ending of the evening song. It should be noted that curve 4 (smoothed light intensity at the time of ending of the evening song) is given on a greatly enlarged scale as respects the ordinate axis in order to emphasize its form. For this curve, each unit of the ordinate equals .05 foot candles.

The type of data gathered may first be displayed in graphs so as to show the seasonal changes in bird song activity and in light as compared to sunset. Figure 3 is for the Robin. It is noticed at once, in

spite of the saw-toothed curve of the song, that, in general, the time of ending of the Robin's song parallels sunset time. The light intensity at the time of the song ending varied from .1 to 10.0 foot-candles with the exception of one high day of 101.6 foot-candles. This exceptional day, February 13, 1929, was the second day of the year for the Robins to sing their evening song at this spot and was separated from the first day that they sang by two bright days when they did not sing. It is regarded as very significant that on 47 out of 48 singing days, the Robin stopped its evening song within a range of light intensity of 10 foot-candles. Median light intensity for all days was 6.2 foot-candles at the time of the song ending.

The variability of the evening song ending appears, as respects light intensity, to be related in part to other physiological activities of the Robin, being most variable during the period of the establishment of territory, and during the time of feeding the young, in which the male helps.

The light intensity at sunset was exceedingly variable, ranging from 2 to 115 foot-candles.

The graph (Fig. 4) of the time of ending of the Mockingbird's evening song, like that of the Robin, parallels, in a general way, the time of sunset. Light intensity at the time of ending of the Mockingbird's song is quite variable, ranging from .1 to 175.8 foot-candles, with a median of 19.35.

In data like this, it is desirable to get the average change as well as the actual change. This may be done by smoothing the curve by use of a formula selected by trial and error. The method of smoothing used here may be illustrated by Figure 5 where both the smoothed and unsmoothed curves for light intensity at sunset on the days the Robin sang are given. The unsmoothed values are given above the curves under the letters: *a*, *b*, *c*, *d*, . . . *t*, *u*, *v*. At the top of the figure is given the general formula used for smoothing and just below it the method of using the formula for determining smoothed values for February 8, 13, 14, 15, and 18, respectively. The letters as used in the formula stand for the light intensity values indicated above the graphs.

The smoothed curve of time of ending of the Robin's song (Fig. 3) diverges more and more from the sunset curve until April 6. This means that the Robin sings later and later after sunset on the average until April 6. Then the curves converge until April 13 when they proceed approximately parallel to the end of the period of observation. Apparently this period of convergence corresponds closely with the

period of the feeding of the newly hatched young. It indicates clearly that any study of this kind must consider the physiological activities associated with nesting.

The smoothed light intensity at the time of the ending of the Robin's song (Fig. 3) was such that the Robin stopped singing, when

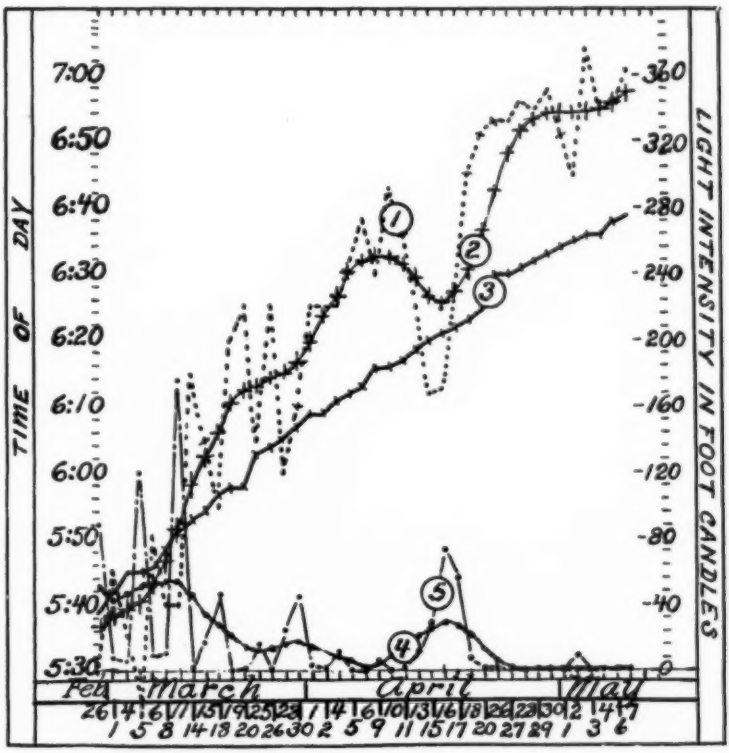

FIG. 4. A Comparison of the Time of Ending of the Evening Song of the Mockingbird with Sunset and with Light Intensity. The numbered curves represent: 1, actual time of ending of the evening song; 2, smoothed time of ending of the evening song; 3, time of sunset; 4, smoothed light intensity at the time of ending of the evening song; 5, actual light intensity at the time of ending of the evening song.

there was less and less light on successive days, until April 4, when it stopped singing with a greater and greater light intensity on successive evenings until April 20. From April 20 to May 7, the Robin stopped his evening song with the light intensity getting less and less. Thus, as far as these data go, there appears a periodic rhythm in this song activity as related to light. This rhythm seems to the authors to be related to the rhythm of physiological activities associated with the nesting cycle.

It should be noted that the actual light intensity at sunset is exceedingly variable, ranging from 2 to 115 foot-candles with a median of 43.5.

The smoothed curve of the time of ending of the Mockingbird's song (Fig. 4) shows similar rhythms to that of the Robin's song with the major depression occurring about April 15. In addition, there are two minor depressions about March 5 and 28. All of these depressions are like the single large depression in the case of the Robin in that the Mockingbird quits singing when the light intensity is higher than usual. It is thought that these rhythms in reaction to light are associated with the nesting cycle. However these rhythms might be associated with unmeasured environmental factors other than light since Shaver and Gladys Walker (1930) have found that the time of ending of the evening song of the Mockingbird is significantly related to temperature.

The data may be further analyzed by the product-moment correlation method of Pearson. This method of analysis gives a single number—the coefficient of correlation—to indicate the correlation between two curves. When the coefficient of correlation is 1.00, there is perfect positive correlation between the two curves; when this coefficient equals 0, there is no correlation; and when it is —1.0 it indicates perfect negative correlation. The method used in calculating this coefficient has been given in detail elsewhere (Shaver and Gladys Walker, 1930) and need not be repeated here.

Table I shows quite clearly the very high positive correlations existing between the time of sunset and the time of ending of the evening song of the Robin and the Mockingbird. This indicates, as has been previously pointed out, that the causative factors of these song endings are related to sunset. Light appears to be the most important of these.

The correlations between the time of ending of both the Robin's and Mockingbird's evening song and light intensity are negative. This apparently means that when these birds stop singing later in the evening than usual, they stop when the light intensity is less than when they stop singing earlier in the evening.

There are several elements which tend to increase the negative values of some of the coefficients. In the second correlation in the table, the increase in the length of the day as spring comes on, increases numerically the values for the time for ending of the evening song. Evening begins no longer at 5:21 but at 6:38. The error due to increase in length of day has been eliminated in correlations 3 by hav-

ing all time calculated from sunset (central standard time, Weather Bureau sunset data). It should be noted in the table that this gives lower coefficients of correlation, as was expected.

Correlations number 3, 5, and 6 are influenced by the increase in the length of twilight after sunset as spring advances because this increases the length of time after sunset to a light of a definite intensity.

TABLE I

The correlation betwen the time of ending of the evening song of the Robin and the Mockingbird and various factors.

No. of the Correlation	The Factors Correlated		*Correlation Coefficients*	
			Robin	*Mock'bird*
1	Time of ending of the evening song	Time of sunset	.92±.01	.94±.01
2	Time of ending of the evening song	Light intensity at the time of ending of the evening song	—.42±.08	—.62±.06
3	Deviation of the time of ending of the evening song from sunset time	Light intensity at the time of ending of the evening song	—.27±.09	—.55±.07
4	Deviation of the time of ending of the evening song from its smoothed value	Deviation of light intensity at the time of ending of the evening song from its smoothed value	—.30±.09	—.65±.06
5	Deviation of the time of ending of the evening song from sunset time	Deviation of light intensity at sunset from its smoothed value	.054±.097	—.36±.09
6	Deviation of smoothed time of ending of the evening song from sunset	Smoothed light intensity at the time of ending of the evening song	—.81±.03	—.77±.04

Finally, as brought out earlier in this paper, the physiological state of the bird, as respects its nesting cycle, apparently influences its song reaction to light.

When all of these things were taken into account, the correlations between the Robin's song ending and light intensity were regarded as expressing the real conditions very unsatisfactorily. In the field work when the days were bright and clear, our notes said that both the Robin and Mockingbird sang later than on cloudy days. The coefficients of correlation already given on light do not indicate this relation.

For a long time the reason for this failure was not apparent. Then it finally came to us that in calculating our coefficients of correlation, no measure of whether the day was cloudy or sunny had been used. We had merely gotten a numerical expression of the relation

between the time of song ending and the light intensity at that time. Just as should have been expected, it was found that when the birds sang later after sunset, they stopped singing at a lower light intensity than when they stopped singing earlier.

Now the light intensity at sunset would give a numerical measure of whether the day was sunny or cloudy and would in addition link light intensity with sunset just as has been done with the time of the song ending. Accordingly, coefficients of correlation between light intensity at sunset and the length of time after sunset to the song ending of both the Robin and Mockingbird were calculated. These coefficients were .54±.07 for the Robin and .58±.07 for the Mockingbird. These coefficients are high enough to be regarded as significant. They indicate that light intensity is a very important factor in causing the ending of the evening song. Still they are low enough to show that light is not the only factor affecting the time of ending of the evening song of these birds.

By correlating smoothed light intensity at sunset and smoothed time of song ending after sunset, similarity of trends can be discovered. The coefficients of correlation for these smoothed curves are .91±.02 for the Robin and .81±.04 for the Mockingbird. These coefficients are high and to the authors indicate that light is the main factor causing the ending of the evening song. Other factors may cause the song to end a few minutes earlier than usual or a few minutes later, but light intensity appears the most significant factor.

Conclusions

1. The time of ending of the evening song of the Robin and of the Mockingbird is highly correlated with sunset time, the coefficients of correlation being .92±.02 for the Robin and .94±.01 for the Mockingbird.

2. On 47 out of 48 days when the Robin sang the evening song, it finished its song within a light range from .1 to 10 foot-candles. This is regarded as a very significant light relation.

3. The light intensity at the time of ending of the evening song of the Mockingbird was quite variable ranging from .1 to 175.8 foot-candles with a mean of 19.3488 and a standard deviation of 36.2167. This gives no indication of the absolute light intensity being significant in the case of the Mockingbird.

4. There is some evidence, in the case of both of these birds, of a variation in the song ending with respect to light intensity according to the physiological relation of the bird as respects the nesting cycle.

5. There is a general tendency for both the Robin and the Mockingbird to stop their evening song at a low light intensity when they sing late after sunset. This is especially marked with the Mockingbird as indicated by the high negative correlations (No. 2, 3, and 4 in Table I).

6. Both the Robin and the Mockingbird sing later after sunset on bright days than on cloudy ones. That this is not the whole story is

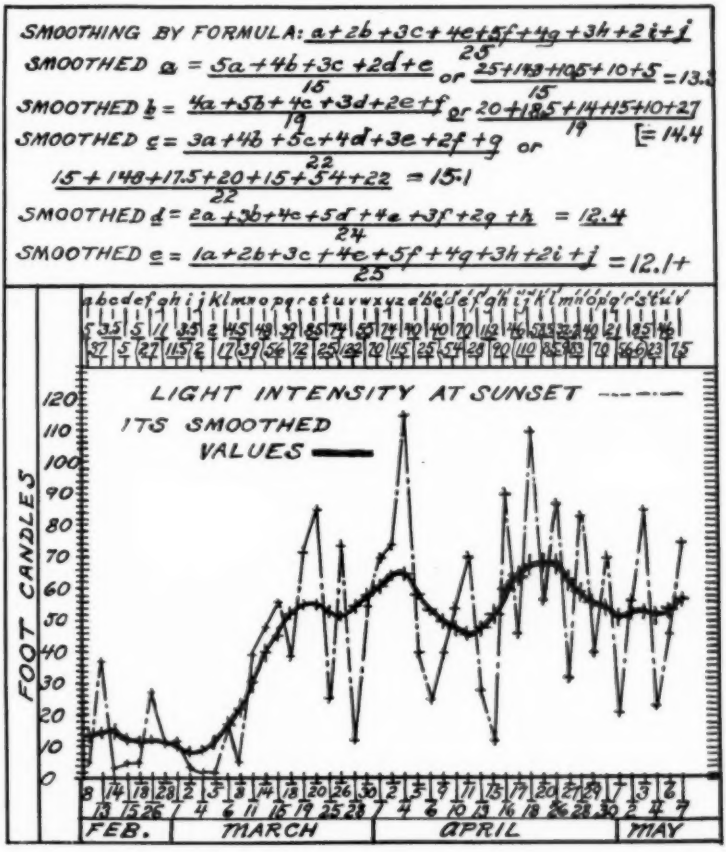

Fig. 5. The Method of Smoothing Curves.

indicated by the smallness of the coefficients of correlation when the time of song ending from sunset is compared with light intensity at sunset. These coefficients were .54±.08 for the Robin and .58±.07 for the Mockingbird.

7. Trends, as indicated by correlating smoothed curves, show that light intensity at sunset is very significant in relation to the time after

sunset that the Robin and the Mockingbird sing, the coefficients being .91±.02 and .81±.04, respectively. It seems highly probable that light intensity is the main cause of the song ending but that other factors cause it to vary somewhat, causing the song to end earlier than usual on some days and later on others.

Literature Cited

Dorno, C., 1924. Reizphysiologische studien über den Gesang der Vögel im Hochgebirge. Pflüger's Archiv für die gesamte Physiologie, 204: 642-651.

Haecker, V., 1916. Reizphysiologisches über Vögelzug und Frühgesang. Biologisches Centralblatt., 36: 403-431.

———— 1924. Reizphysiologisches über den Abendgesang der Vögel. Pflüger's Archiv für die gesamte Physiologie, 204: 718-725.

Schwan, Albrecht, 1920. Vogelgesang und Wetter. Pflüger's Archiv für gesamte Physiologie, 180: 341-347.

Shaver, Jesse M., and Gladys Walker, 1930. A Preliminary Study of the Effects of Temperature on the Time of Ending of the Evening Song of the Mockingbird. Auk, 47: 385-396.

Walker, Emily Barry, 1928. The Relation of Light to the Awakening Song of Birds. An unpublished master's thesis, George Peabody College for Teachers.

Walker, Gladys, 1929. The Relation of Temperature, Relative Humidity, and Wind Velocity to the Evening Song of Birds. An unpublished master's thesis, George Peabody College for Teachers.

George Peabody College for Teachers,
Nashville, Tennessee.

THE SOARING OF RAPTORIAL BIRDS*

BY R. H. PALMER

Perhaps the most spectacular of the many accomplishments of birds is that strange modification of their flight called soaring. An old red-tail, floating high in the air, moving in more or less irregular circles, banking in the sharp turns or against sudden gusts until he is a mere speck against the sky, "oozing around," as Riley says, and with scarcely a beat of the wing, does not fail to register on the mind of even a casual observer. A buzzard appearing as a mere dot in the distance and slowly moving towards a decaying carcass, bent on the

*This paper was transmitted to the present Editor in 1925 by his predecessor; the delay in publication has been due to the misplacement of the figures.—Editor.

twofold mission of banqueteer and scavenger with the same ease is an object of wonderment even to the more thoughtful observer. A Sparrow Hawk, poised immovably in the air, scanning the field below for a mousy diet seems to be a living, concrete instance of one valid exception to the law of gravitation. How do they do it? is a question often asked and many more times wondered.

It is the purpose of this paper to record a few observations and to suggest what is hoped may be a possible explanation, or at least to throw some light on this common though none the less rather curious and interesting phenomenon. It is not the intention to have included in any deductions or inferences any but the raptorial birds as this is the only order on which any observations, more or less extended, have been made.

I have very often noted that hawks and buzzards seemed more energetic, and used their wings in the commonly accepted manner, in the early morning or in cloudy weather or when there was little or no wind; stated conversely, they resorted to soaring only *when the sun was shining* or *when the wind was blowing;* and that the Sparrow Hawk never hovered without beating its wings *except in a wind.* I have further noticed that they are much more prone to soaring in hilly or mountainous country than where the topography is uniform, as in the broad Mississippi Valley. The connection, I take it, is this: the physical phenomenona I have mentioned cause currents in the air that these birds take advantage of. Let me explain. The sun shining on the earth heats the ground which in turn heats the overlying air. This expands and rises or sets up convection currents. The large many domed cloud banks with the horizontal bases resembling aggregates of giant milk-weed down floating in the air, cumulus clouds, are formed by just these currents so the meteorologists say. If one takes the time to watch the evolving round masses that are continually unfolding or blossoming out in a cumulus cloud, he is seeing the process actually in operation. What is taking place is this: the currents of warm air rise and are cooled to the point where the water vapor condenses and a cloud results. Above this they are visible and the unfolding is seen. Obviously these can be formed only while the sun is shining. Now a hawk or buzzard can by means of his rudder-like tail poise over the most advantageous points of this potential cloud and by circling keep over these points. At the same time, by circling, he moves up a spiral incline. If he remained over one fixed point, it would require a rather strong, though not unusual, current to overcome the

pull of gravity and carry him upward or to prevent his falling.* What really takes place, as will be explained later, is that he is gliding *down* an incline. It is possible that the spiral motion of the rising air may in some manner bear a casual relation to the circling direction taken by the bird.

The wind and topography factors need a word of explanation. Air moving against a rise of land follows along the topography and up the hill or mountain side causing by its upward movement a bulge or arch in the layers of air above the crest of the hill or ridge. This roughly parallels the ground below. It is on this bulge that the Sparrow Hawk is able to poise with absolutely no movement of his wings, balancing himself by steady, sure movements of his broad fan-like tail. Where there is a ridge as along a range of hills or along a well defined bank bordering the floodplain of a fair sized river it is no uncommon sight to see red-tails and buzzards soaring along, apparently for the pure sport afforded, or to see a Sparrow Hawk hovering.

A few examples may serve to make my point clear. Several years ago in southeastern Idaho I was up in the hills and observed an eagle floating in broad irregular circles a thousand feet or so in the air. It was a bright sunny day and he was taking full advantage of it all. Apparently he had nothing else particularly in view for he was in sight something better than an hour. Idaho weather is like the time-tables of the railroad—subject to change without notice. Several small and then larger and larger clouds rapidly hove in sight so that much less than a half of an hour the sun appeared between the cloud masses very much less than half of the time. Along with this sudden change the eagle began to manipulate his wings and shortly *flew* off (not by soaring) and disappeared.

Another day I was walking along the crest of a rather steep ridge broadside of which a thirty-mile, steady wind was blowing. A flock of nine buzzards were sailing up and down along the crest a hundred feet or so in the air "without an apparent movement of their wings," as I wrote in my notebook; and further, "a little Sparrow Hawk was

*The efficacy of these rising currents to carry a bird upward might be questioned. It needs but to be called to mind that hail is caused by drops of water being carried upward where they receive a coating of snow. Hailstones often bean evidence of having been carried upward and dropped at least three successive times. Personal communications from aviators record the fact that when these currents are encountered the planes are shot upward by their force. In a recent parachute drop from an airplane at an elevation of 6,000 feet in Seattle, it was observed that the parachute was carried upward several hundred feet by these rising currents.

hunting in his usual way hovering over likely places. Several times he remained absolutely stationary in the air facing the wind without a movement of his wings, his little tail moving up and down in a steadying motion." On another day in the same locality I saw a hawk remain absolutely stationary in the air except for the slight steadying motion of his tail for forty seconds by actual measurement.

In the summer of 1920 I had a fine opportunity to observe the flying and soaring of buzzards. For a month or so I was camped in a small canon in the Simi Hills down in southern California. A half mile or so down the canon was a large hog ranch into which cholera was making costly inroads. This, of course, called in Nature's scavengers in great numbers. It was no uncommon sight to see 150 of these spectral fellows variously distributed in the air, on posts, in trees, or gorging themselves on this filthy diet. Light morning fogs were the usual thing and as long as these were on these birds never soared without *losing elevation*. However, when there was a wind they would soar around in true buzzard form. As soon as the sun appeared over the hills and dispelled the fog the same change in their system of aerial navigation followed.

The question may arise as to how soaring birds progress through the air. The answer is this. They simply coast down hill *with reference to the medium they are in* and this medium rising keeps them at the same elevation above the earth. For example, if a cardboard is allowed to fall its course is not straight down but rather zigzag due to the resistance of the air. If this zigzag course is prevented by proper balancing so that one end is somewhat lower than the other it will sail down an incline. Now if there is an upward current of air sufficiently strong to keep the cardboard at a given elevation it will move forward in a horizontal line. The accompanying figures illustrate the principles of physics involved. Let W-P (Fig. 1) represent a cross-section of the cardboard in question and x the angle it makes with the horizontal or, in the case of the soaring of the bird, the wing pitch, a-g the resistance of the air or its upward push and a-b the force of gravity. Now if there were no pitch to the cardboard or wings, i. e., if W-P were horizontal the resistance of the air would act in a direction exactly opposite to the pull of gravity and the cardboard or bird would fall in a given time a distance that would be the resultant of these two forces, say to the point g′. But the pitch of the cardboard or the wing pitch of the bird (and this is exactly analogous of the trim of a sail) alters these simple conditions.

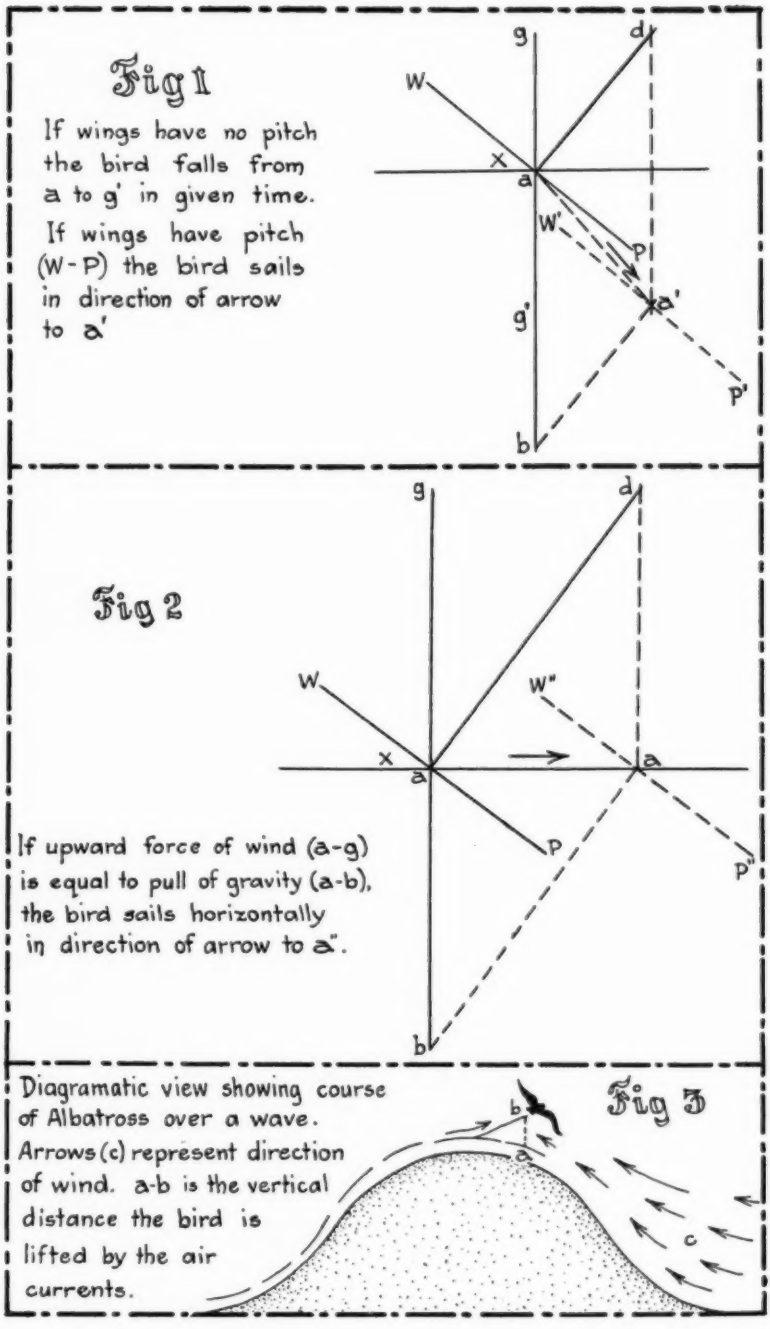

FIG. 6. Diagrams for the article on soaring flight.

The wing pitch resolves the resistance of the air into two components: one acting parallel to the wing (a-w) and hence having no effect and one acting at right angles to the surface (a-d). We now have the two forces acting on the bird; a-d due to air resistance, and a-b the gravity pull. The resultant a-a′ leaves at bird at a′.

In the third case, illustrated in Fig. 2, there is an *upward current* of air a-g acting against the bird equal to the force of gravity a-b (and in the case of soaring the wing pitch is exactly adjusted to this end). We now have the two components a-d and a-b with the resultant a-a″, i. e., the resultant is the only force effective to move the bird with the result that it moves in a horizontal direction to the position a″.

A moment's reflection will show that any increase or decrease in the force of the upward current can be met by changing the pitch of the wing so that the only effect, within ordinary limits, will be an increase or a decrease in the horizontal velocity of the bird.

As stated, this discussion refers to raptores only. However, I cannot refrain from mentioning some observations made on the Black-footed Albatross (*Diomedia nigripes*), or the goony, as he is known to the sailors. In September, 1920, I had an opportunity to keep several of these birds under observation off and on for several days. These long, narrow-winged fellows are past masters in the art of soaring. They usually keep within less than a foot of the water and there is seldom a movement except to veer sideways or up or down to avoid a passing wave or swell. They have no difficulty whatever in following a steamer by resorting to soaring only. So close do they hug the water that they occasionally cut its surface with the tips of their pinions. However, it was noticeable that *they rose a considerable distance in the air as the crest of a wave passed under them*, i. e., the wind, moving faster than the wave, *moved upward* as it passed up to and over the crest; and as the bird appeared over the crest it likewise was carried upward a few inches. This allowed him enough elevation to cupply velocity sufficient, while going down into the trough to carry him to the crest of the succeeding wave. The slight acceleration to his rising course a-b (Fig. 3) was very often noticeable. In other words the goony, on a very small scale, was doing exactly what the nine buzzards were doing on a much larger scale, with the difference that the crest was continually changing. This latter, however, introduces no new factors. I regret to add that during the entire time the albatrosses were under observation there was a high wind and a heavy sea; so there was no opportunity to secure any data on their flying when there was no possible assistance from this source.

Gulls following a boat soar in certain difinite areas with respect to the boat. It seems probable that some of the air eddies, that are caused by the boat's motion through the air and the accompanying wind together with the heated air that escapes from the engine room and funnels and streams *backward* and *upward*, may result in small areas where there are upward currents that are sufficiently strong and persistent to support birds for a longer or shorter distance.

University of Washington,
Seattle, Washington.

QUARTERING FLIGHT IN MIGRATION

BY E. C. HOFFMAN

By quartering flight is meant flight not directly against the wind, but rather at a substantial angle with the wind, perhaps fifteen to forty degrees. That such flight exists in nature is shown by the observations of Lynds Jones (1) on Hummingbirds flying from Pelee Island to Middle Bass Island in Lake Erie. It is also shown by William Beebes' notes on the Albatross (2). A. H. Clark (3) mentions the direction of the migration of the Golden Plover as being not in a direct line to the destination but across prevailing southwesterly winds along the northern part of their journey. However this last observation may be due to the fact that many birds tend to begin their migration during a period of high barometer (4). The direction of the winds in such an area of high air pressure being clockwise the migration routes in the area covered by the average northeasterly moving "high" would tend toward the eastward in the fall and toward the westward in the spring (5), (6). One of the most complete accounts of the flight of flying fishes is that by Holland (7) who states that the flight is at an angle with the wind.

Somewhat analogous is the tacking of a sailboat advancing against the wind by using the force of the same wind acting against the resistance of the boat to the water. See Headley (10), page 8. Perhaps in the case of the bird the resistance is furnished by pulsating air currents. Pulsating air currents are discussed by Wolfgang Klemperer (8), who in a letter to the writer dated December 20, 1929, mentions the Knoller-Betz theory of pulsating air currents. (9), (11), (12). Variations in wind velocity are also discussed by Otto Lilienthal (13); by Huffaker (14); by Hankin (15) who mentions "a form of air motion that blows a feather to leeward at one speed and blows the

complete bird to windward at another and greater speed"; by Maxim (16); by Dreisch (17); and by Langley (18).

It appears that birds wishing to take advantage of quartering flight fly at low elevations, particularly over the water, where air pulsations are caused by wave motion of the water. As shown by airplane experience, the air becomes quieter with increasing elevation. Over the cloud level few if any "bumps" are encountered and the air is usually quiet except when air strata moving in different directions meet, though the velocity relative to the earth increases with altitude. Probably therefore quartering flight is not common at the higher elevations and birds as well as airplanes travel in the upper air currents

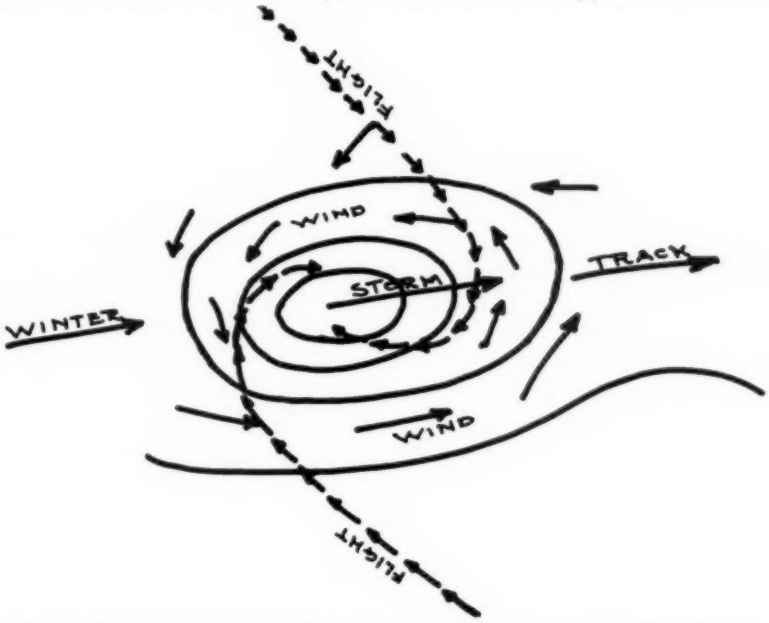

FIG 7. Diagram to show the effects on birds of quartering flight in a storm.

for the advantage of the increased velocity resulting from a favorable tail wind.

Wing areas apparently determine the character of flight, the Hummingbird depending mostly on wing motion while the Albatross, with its great wing spread, finds soaring flight most efficient. Soaring flight caused by air pulsations appears to be distinct from soaring flight resulting from rising air currents. Soaring flight in a rising air current is circular, except where the rising current is caused by a cliff or other obstruction. In fact a circular soaring flight may be taken as an indication of an ascending air current.

One of the unexplained features in the study of marked birds has been the small percentage of recaptures or returns in subsequent years of the smaller Canadian birds banded during migration at northern stations (19), (20), (21), (28). Apparently these birds, though they are reported as returning in subsequent years to their winter homes—for instance, White-throated Sparrows (*Zonotrichia albicollis*) at Thomasville, Georgia—must usually arrive in the south by different routes each year (22), (23).* That a quartering flight offers a favorable air movement condition is noted by Wetmore (22, page 55). In a letter to the writer dated October 28, 1927, Lynds Jones says, "I have noticed quartering flight a good many times where there was a stream of flying birds, such as the migration flights of Crows, Bluebirds, Killdeers, blackbirds, ducks, and particularly of Lapland Longspurs in central Iowa, when I lived at Grinnell prior to 1890." If this quartering flight is customary it is evident that the only chance of recapturing banded birds at the same place will come with similar winds in following years.

If the flight of the Lapland Longspur (*Calcarius lapponicus*) is quartering, then a flock of these birds approaching a winter storm would tend to turn to the right. As shown on the chart (Fig. 7) the constantly shifting winds, moving counter-clockwise, would tend to keep the flock in the storm area.

That disasters have occurred to large flocks of Lapland Longspurs is shown by the accounts of Roberts (24), who estimated the mortality on part of the area at 750,000; of Saunders (25); and of Swenk (26).

Storms of the winter type, according to Ward (27) move eastward with increasing intensity in the regions, the north central states, where these disasters to bird life have been observed. Under these conditions a heavy fall of wet, clinging snow would force larger birds to the ground and completely destroy most of the smaller birds.

The writer suggests experiments with homing pigeons and also with gliding and sailing airplanes as a means of increasing our knowledge of pulsating air currents and quartering flight. Such experiments may also increase the efficiency of the planes.

References

1. Jones, Lynds. 1909. Birds of Cedar Point and Vicinity. Wilson Bulletin, XXI, *December*, 1909, p. 204.
2. Beebe, William. 1926. Arcturus Adventure, p. 99.

*Special acknowledgment is made to S. Prentiss Baldwin for data on White-throated Sparrows, and to Rev. John A. Brady for data covering the period from 1924 to 1926. No recaptures in subsequent years are shown by these records.

3. Clark, Austin H. 1905. The Migrations of Certain Shore Birds. *Auk*, XXII, 1905, pp. 134-140.
4. Hoffman, E. C. Martin and Nighthawk Migration, Unpublished Data.
5. Cooke, Wells W. 1905. Routes of Bird Migration, *Auk*, XXII, 1905, pp. 1-11.
6. Cooke, Wells W. 1915. Bird Migration. Bull. 185, U. S. Dept. Ag., pp. 12, 18, 20, 24.
7. Holland, Wm. J. 1913. To the River Plate and Back, p. 30.
8. Klemperer, Wolfgang. 1927. Soaring Flight. Report Smith. Inst. 1927. Pp. 221-241.
9. Klemperer, Wolfgang. 1926. Theorie des Segelfluges. (Theory of Sailing Flight). P. 38. Published by Julius Springer, Berlin. This is a mathematical discussion, and perhaps the best reference on the theory of flight.
10. Headley, F. W. 1912. The Flight of Birds. P. 8.
11. Betz, A. 1912. Ein Beitrag zur Erklarung des Segelfluges. Zeitschrift fur Flugtechnik und Motorluftschiffahrt. 1912. P. 269.
12. Knoller, R. 1913. Zur Theorie des Segelfluges. Zeitschrift fur Flugtechnik und Motorluftschiffahrt. 1913. P. 13.
13. Lilienthal, Otto. 1911. Bird Flight. P. 81, pl. 5, fig. 3.
14. Huffaker, E. C. 1897. On Soaring Flight. Report Smith. Inst. 1897. P. 204.
15. Hankin, E. H. 1913. Animal Flight. Pp. 249, 299.
16. Maxim, Sir Hiram S. 1909. Artificial and Natural Flight. P. 108.
17. Dreisch, Th. 1922. Der Segelflug der Vogel.
18. Langley, S. P. 1893. The Internal Work of the Wind. Smithsonian Contributions to Knowledge, Vol. 27, p. 16, No. 884.
19, 20, 21. Baldwin, S. P., Brady, Rev. John A., Hoffman, E. C. Unpublished data on White-throated Sparrows.
22. Wetmore, Alexander. 1926. The Migrations of Birds. Pp. 55-62.
23. Baldwin, S. P. 1921. *Auk*, XXXVIII, pp. 236-237.
24. Roberts, T. S. 1907. *Auk*, XXIV, pp. 369-377.
25. Saunders, W. E. 1907. *Auk*, XXIV, pp. 108-110.
26. Swenk, Myron H. 1922. Wilson Bulletin, XXXIV, pp. 118-119.
27. Ward, R. D. 1925. The Climates of the United States. Pp. 45-53.
28. Hoffman, E. C. 1928. Quartering Flight. Bull. Northeastern B. B. Assoc., IV, p. 28.

Lakewood, Ohio.

CONTROL OF INSECTS BY BIRDS

BY W. L. MCATEE

While the article by C. N. Ainslie on "The Economic Importance of Birds as Insect Predators" in the September, 1930, issue of the WILSON BULLETIN is written in the best of spirit, I believe that its effect on the general reader will be an unwarranted one. The impression probably will be that birds are of little, parasites of great, value in controlling insect pests, while the fact is that if we consider the degree of control necessary to commercial success of a crop it is rarely attained as a result of the work of natural enemies of whatever kind. The latter owe their existence to the fact that there is a proportion of the individuals of their prey that can be consumed without any permanent decrease in the numbers of these species as a whole. It is this surplus that is the perennial support of natural enemies and it is seldom that they consume more. In other words, they live upon the interest and leave the capital intact.

Natural enemies, however, are only a part of the entire complex of natural control, and leading entomological authorities seem to agree that they are not a very large part. B. P. Uvarov[1] has pointed out

pp. 17-18.

that recent researches "throw some doubt on the commonly accepted idea that the chief controlling factor is the parasites, since a number of cases have become known in which the factors normally keeping an insect species down are alwost entirely of meteorological order. This has been admitted for the cotton boll weevil in America (Hunter and Pierce, 1912), for the corn-borer in Europe (Thompson and Parker, 1928), for the almond sawfly in Palestine (Bodenheimer, 1928), for the cotton seed bug in Egypt (Kirkpatrick, 1923), for plague fleas in India (Hirst, Rogers), for vine-moths in Europe (Stellwaag, 1925), and for some other notorious pests."

Again F. S. Bodenheimer[2] in answering the question "Welche Faktoren regulieren die Individuenzahl einer Insektenart in der Natur?" states that parasites, predators, and scarcity of food, are rarely or only secondarily of regulatory significance, but that climatic factors are the real controlling influences."

The late F. H. Chittenden[3] in discussing insects and the weather further states, "It also appears to me what has been observed by Mr. Marlatt in the case of scale insects . . . is true in general, viz., that

---

[1]Conference of [British] Empire Meteorologists, 1929, Agricultural Section,
[2]Biol. Zentralbl., 48, 1928, pp. 714-739.
[3]Bul. 22, N. S., Div. Ent., U. S. Dept. Agr., 1900, p. 63.

favorable or unfavorable climatic conditions are of greater importance in determining the abundance or scarcity of insects as a whole than are other natural checks such as parasitic and other enemies, or even fungous or bacterial diseases."

There is hardly anything more characteristic of publications on economic entomology than the remark, after detailing the activities of predators, parasites, and diseases, that none of these can be depended upon for controlling the pests. Mr. Ainslie's remark therefore "that useful as birds are in their way, they can seldom be depended upon unaided to rid us of our insect enemies" is just as true in general of parasitic insects and other natural enemies as it is of birds. What needs to be kept in mind at all times is that in assigning economic values to natural enemies, it is best to speak in terms of tendencies rather than of achievements. Good economic tendencies are as satisfactory as any grounds for advocating the protection of natural enemies.

U. S. Biological Survey,
Washington, D. C.

MIGRATION OF CANADA GEESE FROM THE JACK MINER SANCTUARY AND BANDING OPERATIONS

BY MANLY F. MINER

Much ink has been used by various writers and authors describing the origin and history of the Jack Miner Bird Sanctuary, but to me the big achievement there has been scarcely mentioned, namely, the catching and tagging of the Canada Goose to study its route of migration in both spring and fall, and to find where it nests and raises its young during the summer months.

It was in 1902 and 1903 that Jack Miner conceived the idea of establishing a bird sanctuary, the first of its kind in Canada, if not on the continent. But not until 1904 was work on the sanctuary actually started, that is, excavations made for ponds, several wing-tipped live decoy geese placed on same, and corn spread plentifully around the banks. Ducks and geese, in a short time, found this to be a place of safety. Both the conservationists and shooters were back of the Jack Miner scheme, because the Sanctuary, taking nothing from the shooters, constantly builds up the hunters' chances a mile away, the bird haven attracting many birds to the community. At the same time the birds became wise enough, when shot at from the property where they were unprotected, to fly back to their safety zone and haven of rest.

Eventually the birds commenced to congregate on the Sanctuary in large numbers. Jack Miner had no desire to shoot, but was anxious to study and find out where these feathered creatures spent each season of the year. On August 5, 1909, he caught a duck and wrapped around its leg a piece of aluminum, on which was stamped his post office address. This was the first time Jack Miner had done such a thing and, incidentally, this record is probably the first of the kind on the continent. Thus not only is Jack Miner's Sanctuary the first of its kind in North America, but he is the pioneer in tagging ducks.

A few months later—January 14, 1910—the duck which had the honor of bearing the first tag was killed by W. E. Bray of Anderson, S. C.

Naturally, great enthusiasm was caused and the problem then confronting the owner of the Sanctuary was how to build nets and other contrivances to catch the ducks without injuring them, in order that they might be tagged. He had no books or plans to which he could refer, for there was nothing of the kind in existence. So, after attracting the birds to the Sanctuary, it fell to the lot of Jack Miner to invent a contrivance for catching the ducks. This he accomplished after many months of work, the result being that today there are hundreds and hundreds of ducks flying to and fro across the continent wearing his tags. Nearly every mail brings reports to the Sanctuary from hunters of North America of the killing of tagged birds.

By 1914 Jack Miner had learned where ducks, Mourning Doves, Robins, etc., spend each season of the year. His next ambition was to catch and tag Canada Geese, the wildest of wild birds and practically the largest migratory waterfowl on the continent. He soon found that catching Canada Geese was a very different undertaking compared with catching ducks. Although the geese, at this time, were coming to his Sanctuary by the hundreds for food and protection—where neither rich nor poor could enter with a gun; but to catch one of these birds for tagging purposes was another thing. They would not go near the network he had arranged for catching ducks. So, after a year's constant study, he contrived a method of having two ponds with a canal connecting them covered with network and a trapdoor at both ends. It was in 1915 that he caught his first wild Canada Goose and placed an aluminum tag on its leg, giving the post office address of the owner of the Sanctuary.

Jack Miner is by no means a religious fanatic, but he believes in the simple teachings of Christ and, being anxious to make his tagging system complete and fascinating, a short verse of scripture, such as

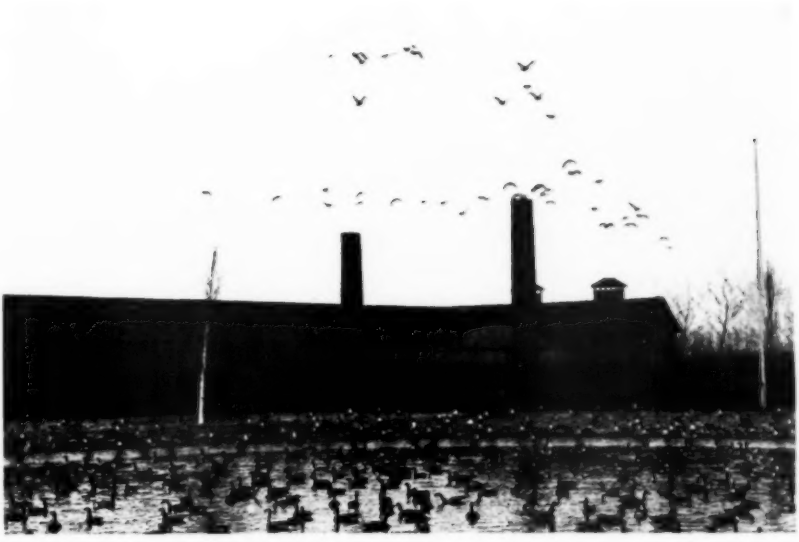

FIG. 8. Canada Geese on the Jack Miner Sanctuary.

FIG. 9. Canada Geese rising from the Jack Miner Sanctuary.

"Have faith in God," "God is able." and so forth, is stamped on one side of his tag. In this way every person who gets one of his tagged birds gets a verse of scripture, which has more than doubled the interest of his tagging system.

In the spring of 1915 and just before the geese migrated for parts unknown in the North, he caught and tagged his first Canada Goose, and liberated it again with the big flock from which it had been taken. Interest was aroused in the community as to who would kill it, and where. No one had ever caught one before for tagging purposes, no one knew where they nested. All that was known was that they went north and the settler in the most northern point in Canada always reported that "they went still farther north."

However, weeks and months rolled by and, to the surprise of everyone, early in October of the same year, Jack Miner received a letter from the Hudson Bay Company at Moose Factory, dated August 19, 1915, containing this tag. The goose had been killed by an Indian in unsurveyed territory in the Hudson Bay District.

This, naturally, interested the whole country, and, with real enthusiasm, Jack Miner began to work on the improvement of his goose trap in order to catch geese by the hundreds. The next year it proved to be a decided success. Many more geese were tagged and, later on in the season, word was received from different points along the east side of Hudson Bay and James Bay, and as far as Baffin Land of tagged geese being shot.

On one occasion the Reverend W. G. Walton, an Anglican missionary, who had spent between twenty and thirty years among the Indians and Eskimos and had never been out to civilization, came by canoe from Hudson Bay to Cochrane. Taking the train there, he in due course arrived at Kingsville and the Sanctuary. With him he brought a pocketful of tags, each of which bore a passage of scripture and Jack Miner's post office address. He had collected these from the Indians and Eskimos all the way from the factory, at James Bay, along the east coast of Hudson Bay and as far north as Baffin Land. The natives had brought them to him for interpretation of the verse of scripture.

Through these tags, this devoted Christian missionary, together with the Hudson Bay fur dealers and the agents of Revillion Fur Company, who have also cooperated to a great extent in collecting them from the natives, a lot of valuable information as to why these birds nest around the shores and islands of Hudson Bay and Baffin Land, instead of along the rivers and streams, has been revealed to the world.

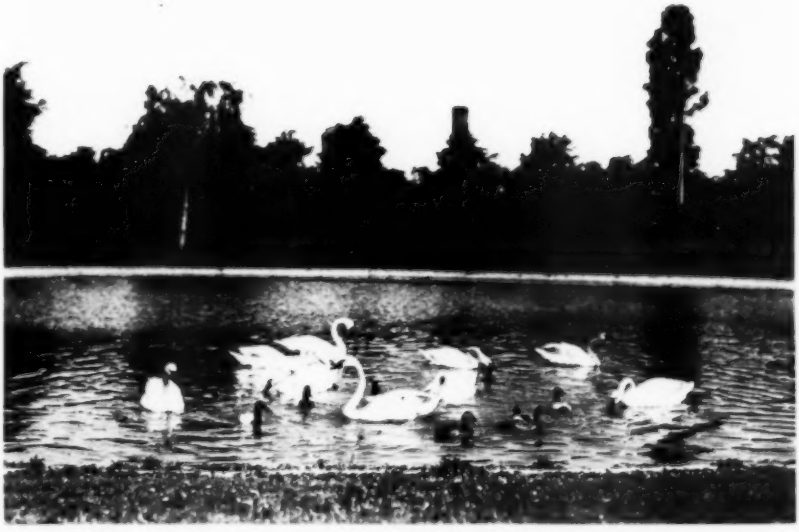

FIG. 10. Wild Swans and other fowl on the Jack Miner Sanctuary.

FIG. 11. Jack Miner and his home.

The geese arrive in that vicinity around the latter part of April and the first part of May. The rivers and all fresh water are all frozen over at that season of the year, but the Hudson Bay is opened up by the incoming ocean current and the geese prefer to nest where there is open water.

The tagging system has also revealed where they spend their winters. Each tag bears a date and it has been proven that very few geese which visit the Sanctuary in the fall visit the following spring, as practically all geese bearing fall tags are killed in the middle states, along the east of the Mississippi River and towards the Gulf of Mexico, while geese which are tagged in the spring winter along the Atlantic coast, mostly around Carrituck Sound. The geese which spend the winter along the Atlantic seaboard nest in the extreme northerly portion of Hudson Bay and Baffin Land. When the fall comes and it turns cold, instead of migrating inland, they follow the ocean around by the way of Labrador, Newfoundland, and the New England coast, southward to Carrituck Sound. But when March and early April come, it is too warm in North Carolina for them. The Labrador coast and their summer quarters, however, are still frozen over with zero temperatures. The geese, therefore, migrate north from the southern states to the Great Lakes region, where they congregate at this Sanctuary during the months of March and April.

There have been tagged nearly 6,000 geese since 1915 and year after year those that are not killed return to this protected property, wearing their bright aluminum bands around their legs. This fall 100 geese out of 500 which stood on one of our ponds wore tags. The pond is only one acre in size and as I look at the map of North America in my old school geography, there are no words or anything small enough to represent one acre on it. Even the dot of a pencil would represent several square miles. Yet the most remarkable thing about the migration of these birds is that year after year, as regularly as the sun rises, those that are not killed find their way back to the Jack Miner Sanctuary at Kingsville, Ontario, Canada.

Kingsville, Ontario.

THE RIDGWAY MEMORIAL COMPLETED

BY HARRY C. OBERHOLSER

Readers of the WILSON BULLETIN will be pleased to learn that the fund to maintain Bird Haven as a memorial to Mr. Robert Ridgway, the ornithologist, has at last been provided. Bird Haven, it will be recalled, is a tract of some eighteen acres, mostly second growth forest, situated near Olney, Illinois. It had been developed by Mr. Ridgway over a period of years, and its association with him and the possibiilties there for the preservation of birds and plants made it an admirable kind of memorial to the memory of this great naturalist. On the tract there are more than fifty species of native trees in addition to many shrubs and flowers. It was offered by Mr. Ridgway as a permanent sanctuary if a sufficient fund could be raised for its maintenance.

At the meeting of the American Ornithologists' Union in New York in 1925, the project of a memorial to Mr. Ridgway was introduced, and a committee authorized for the purpose of raising the fund to preserve Bird Haven for this purpose. The Wilson Ornithological Club and the Cooper Ornithological Club were each invited later to appoint a representative to act with the representative from the American Ornithologists' Union as a national committee for the purpose of raising the memorial fund. By the appointment of Dr. Harry C. Oberholser, of Washington, D. C., for the American Ornithologists' Union, Mr. Percival B. Coffin, of Chicago, for the Wilson Ornithological Club, and Mr. Harry Harris, of Eagle Rock, California, for the Cooper Ornithological Club, this committee was organized. Subsequently, Mrs. Gertrude Cox, of Chicago, was added as a special representative for Illinois. The further organization for the purpose of the campaign for raising the fund consisted of committees in practically all of the States of the Union and in Canada. The Ridgway Bird Haven Association was formed and incorporated under the laws of Illinois in 1927 for the purpose of administering the fund and caring for Bird Haven when provision should be made for its maintenance.

Through efforts of these committees approximately $27,000 was raised, and in the summer of 1929 Mrs. Frances K. Hutchinson, of Chicago, offered to assume the responsibility of increasing the fund to $50,000 and thus provide for the future of Bird Haven. Mrs. Hutchinson also purchased and added to Bird Haven the adjoining

farm of about 100 acres, which will greatly improve the area as a sanctuary.

A new organization called the Bird Haven Memorial Association was incorporated in 1929 to take the place of the original Ridgway Bird Haven Association, and this new organization will assume responsibility for the property and all the funds raised for its maintenance.

Mention should here be made of all those who have aided in the establishment of the Ridgway Memorial. We regret that it is not possible here to give the names of all of these, but the chairman of the national committee wishes to express his sincere appreciation of all this cordial coöperation, without which the success of the movement would have been impossible. A list of the special committees and of the chairmen of the state committees is given below:

General Committees and State Chairmen of the Ridgway Memorial

National Committee. Dr. Harry C. Oberholser, Chairman; Mr. Harry Harris, Mr. Percival Brooks Coffin, Mrs. Gertrude Cox.

Illinois Special Committee. Mr. Percival Brooks Coffin, Chairman; Mrs. Gertrude Cox, Mr. O. M. Schantz, Mrs. A. B. Crosby.

New England Special Committee. Mr. Charles F. Batchelder, Chairman; Mr. Laurence B. Fletcher, Mr. Charles B. Floyd, Mr. Lovell Thompson.

Alabama, Prof. J. M. Robinson. Arizona, Dr. W. P. Taylor. Arkansas, Mrs. W. T. Kelton. California, Mr. Harry Harris. Canada, Prof. William Rowan. Colorado, Mr. E. R. Warren. Connecticut, Mrs. Lucy Stock Chapin. District of Columbia, Dr. A. K. Fisher. Florida, Mr. R. J. Longstreet. Georgia, Mr. Thomas D. Burleigh. Idaho, Mrs. S. E. Hyde. Illinois, Mr. Percival B. Coffin. Indiana, Mr. S. E. Perkins, III. Iowa, Mrs F. May Tuttle. Kansas, Mr. Dix Teachenor. Kentucky, Dr. L. O. Pindar. Maine, Dr. Alfred O. Gross. Maryland, Mr. Talbott Denmead. Massachusetts, Mr. Charles F. Batchelder. Michigan, Mr. M. J. Magee. Minnesota, Dr. T. S. Roberts. Mississippi, Miss Fannye A. Cook. Missouri (eastern), Dr. Herman von Schrenk. Missouri (western), Mr. Dix Teachenor. Montana, Dr. M. J. Elrod. Nebraska, Dr. Robert H. Wolcott. New Hampshire, Mr. George S. Foster. New Jersey, Mr. J. Fletcher Street. New Mexico, Mr. J. S. Ligon. New York, Dr. Frank M. Chapman. North Carolina, Dr. Z. P. Metcalf. North Dakota, Prof. O .A. Stevens. Ohio. Dr. Lynds Jones. Oklahoma, Mrs. Margaret M. Nice. Oregon, Mr. Stanley G. Jewett. Pennsylvania (eastern), Mr. J. Fletcher Street. Pennsylvania (western), Mr. Bayard H. Christy. Rhode Island, Mr. Henry E. Childs. South Carolina, Miss Laura M. Bragg. South Dakota, Mr. William H. Over. Tennessee, Prof. George R. Mayfield. Texas, Dr. A. R. Shearer. Utah, Mr. Claude T. Barnes. Vermont, Mr. Wendell P. Smith. Virginia, Prof. Thomas Smyth. Washington, Mr. Harry Harris. West Virginia, Mr. A. B. Brooks. Wisconsin. Dr. Warner Taylor, Dr. Leon J. Cole.

U. S. Biological Survey.

Washington, D. C.

NOTES ON THE BREEDING BIRDS OF STATE COLLEGE, CENTER COUNTY, PENNSYLVANIA

BY THOS. D. BURLEIGH

These notes supplement an article which was published in the WILSON BULLETIN (June and September, 1924, Vol. XXXVI, No. 2 and 3) dealing with migration records from Center County, Pennsylvania. They cover the same period, from September, 1914, through May, 1917, and the spring of 1919, as well also as the summer of 1920. While the larger number of my breeding records were taken in Center County, some of the rarer species, such as the Northern Pileated Woodpecker, could be found only well back in the mountains and a number of my best records were the result of week ends spent at Charter Oak, approximately ten miles south of State College, and in Huntingdon County. All other localities mentioned refer to Center County. No migration records are here included, nor is there need to touch on the topography of this region again. For the sake of uniformity the same nomenclature is used as in the previous article, accepted changes in scientific names being disregarded at this time until the new Check-List appears.

PIED-BILLED GREBE. *Podilymbus podiceps.* There being no previous published record of this species breeding in the state I was rather interested to find a pair nesting on the pond at Scotia in 1917. The nest, when found on May 14, held six slightly incubated eggs, and was a floating mass of decaying vegetation attached to a bush at one end of the pond where the water was two feet deep. The eggs were in a slight but well defined hollow in the top, and were covered entirely from sight by a layer of wet half-decomposed grasses and reeds. Both birds were heard, but were not seen.

GREAT BLUE HERON. *Ardea herodias herodias.* A few of these birds probably breed well back in the mountains for they have been seen there late in the spring, but at present I know of no definite breeding record for this species here.

GREEN HERON. *Butorides virescens virescens.* This species is rather scarce here as a breeding bird, and I never actually found a nest, although an occasional bird seen during the spring months left no question in my mind as to its nesting in rather limited numbers.

VIRGINIA RAIL. *Rallus virginianus.* This species is a plentiful summer resident here, being especially abundant in the large Center Furnace Swamp and in a smaller swamp at Oak Hall. My earliest breeding record is a nest found May 12, 1919, with eleven fresh eggs,

but full sets of fresh eggs, varying in number from seven to eleven, can always be found by the middle of the month. The nests are usually well concealed in the thick marsh grass, and are slightly cupped substantial beds of pieces of reeds and cat-tails and, rarely, the marsh grass.

Sora Rail. *Porzana carolina.* This species is even more plentiful than the preceding, and is so similar in so far as its breeding habits are concerned that nests can be recognized with certainty only by the appearance of the eggs. As with the Virginia Rail my earliest breeding record is a nest found May 12, 1919, with ten slightly incubated eggs, while full sets of fresh eggs, varying in number from eight to twelve, can always be found by the middle of the month.

Woodcock. *Philohela minor.* This species breeds only well back in the mountains, but is fairly plentiful in the wet meadows about Charter Oak. My first nest found there April 15, 1917, held four fresh eggs, and was a slight depression lined with dead leaves between two blue beech saplings at the edge of a marshy field and a short distance out from some underbrush. Another nest found April 6, 1919, held four incubated eggs, and was at the foot of a small white pine in the middle of a marshy field overgrown with underbrush. It was merely a hollow in the deep marsh grass lined with dry pine needles and a few grasses.

Upland Plover. *Bartramia longicauda.* One or two pairs of these fine birds could be found each spring in the large open fields about the town, but I was never fortunate enough to find a nest. They are undoubtedly on the verge of extinction here, and it will be only a few years before they are gone.

Spotted Sandpiper. *Actitis macularia.* This species breeds sparingly about the few streams in the open valley, and is far less common than one would expect to find it here.

Killdeer. *Oxyechus vociferus.* This species is a rather plentiful breeding bird here, occurring in many of the open fields about the town. My first nest, found April 26, 1916, held four incubated eggs, and was merely a slight hollow in the middle of a gravel bar at the side of a small stream in an open field. Another nest found April 30, 1919, held four well incubated eggs, was at the upper end of a large open field and on a slight slope, and was a slight depression in the ground lined with crushed fragments of weed stems.

Ruffed Grouse. *Bonasa umbellus umbellus.* This species breeds only on the mountain ridges, and is of but casual occurrence in the open valleys. In 1917 two nests were found about Charter Oak, one

on the 6th of May with eleven slightly incubated eggs, and one on the 11th of May with twelve somewhat incubated eggs. Both were in fairly open woods, and were mere hollows in the dead leaves at the base of one of the larger trees. These birds drum here as early as the first of March, and on warm days can be heard as late as the first of October.

Wild Turkey. *Meleagris gallopavo silvestris.* This fine game bird still survives in fair numbers in the mountains of central Pennsylvania, and I was favored with frequent glimpses of single birds or small flocks, although I never did succeed in finding a nest. My largest flock was that of twelve birds seen October 5, 1916, feeding at the side of a trail well up a mountainside. At dusk on the 5th of April, 1919, two were watched going to roost in the top of a large white pine in a secluded ravine, flying with considerable noise into the upper branches where they were at once well concealed.

Mourning Dove. *Zenaidura macroura carolinensis.* This species is quite plentiful here during the summer months, being found in many of the orchards and scattered short stretches of woods. My earliest breeding record is that of a nest found April 12, 1917, with two slightly incubated eggs, while other nests have been noted at frequent intervals between that date and the last of May. Each invariably held two eggs, and varied in height from four to fifteen feet from the ground, the usual situation being a crotch of a limb of an apple tree, or of a black willow or a haw (*Crataegus*) at the edge of a field.

Turkey Vulture. *Cathartes aura septentrionalis.* These birds are fairly plentiful here during the summer months, and unquestionably rear their young on the rugged mountain sides that offer many suitable nesting sites, but I have never been fortunate enough to stumble on a nest, although at intervals I have searched carefully for one.

Marsh Hawk. *Circus hudsonius.* This species is a rather uncommon and irregular breeding bird here, and although seen throughout the year I never succeeded in finding a nest.

Cooper's Hawk. *Accipiter cooperi.* This species is one of the commonest of the birds of prey that breed here, nesting both in the open valleys and well back in the mountains. A nest found at Charter Oak on May 4, 1919, held five fresh eggs and was forty-five feet from the ground in the top of a white pine on a ridge covered with fairly open second growth timber. Another found close by on May 11 held five somewhat incubated eggs, and was fifty feet from the ground in a large white pine in a thickly wooded ravine. Both were large and

substantially built of small sticks and twigs, the slight hollow in the top being well lined with flakes of bark.

Sharp-shinned Hawk. *Accipiter velox.* This species breeds rather sparingly here, an occasional pair being found in wooded ravines well back in the mountains where hemlocks predominate. Only once have I noted them nesting in a stretch of pine woods in the open valley, and hardwoods are apparently shunned entirely.

Broad-winged Hawk. *Buteo platypterus.* This species is rarely if ever seen in the open valleys, but is a fairly plentiful breeding bird on the mountain sides and in the wooded ravines. On May 11, 1917, two nests were found about Charter Oak, one with three slightly incubated eggs and the other with two fresh eggs. The latter was up thirty feet from the ground in the top of a pitch pine, and was rather loose and delapidated, evidently a few sticks having been merely added to an ancient Crows' nest and lined with small flakes of bark. Another nest found at Charter Oak on May 18, 1919, held two slightly incubated eggs and was thirty-five feet from the ground in a crotch of a sugar maple at the side of a stream in a ravine. It was well built of sticks, with a lining of flakes of bark and a few sprays of hemlock.

Sparrow Hawk. *Cerchneis sparveria sparveria.* Unlike the other breeding hawks this species shows no liking for the mountain sides, and is found entirely in the scattered short stretches of woods in the open valleys. Here, however, it is quite plentiful, there being few stretches of woods without one pair at least. I have found numerous nests, and have noted with interest the uniformity with which these birds breed. All have held full sets of fresh eggs, five, with the exception of one that had but four, between the 7th and the 10th of May, and all but one have been in natural cavities in the larger trees standing in an open field or at the edge of a short stretch of woods, varying in height from twenty to thirty-five feet from the ground. One pair had chosen an old Flickers' hole in the top of an old decayed stub standing well out in an open field, but a natural cavity is almost invariably given preference over any other situation. The depth of the cavity will vary from a few inches to at times fully two feet, the eggs lying on fragments of rotted wood.

Screech Owl. *Otus asio asio.* This species is a fairly common breeding bird here, nesting both in the scattered short stretches of woods and in the numerous old apple orchards. Two nests were found April 10, 1919, in both four somewhat incubated eggs, and both in cavities of apple trees at the edge of small orchards. One was an old

Flicker's hole but five feet from the ground, while the other was a natural cavity fifteen feet from the ground, large but very shallow.

GREAT HORNED OWL. *Bubo virginianus virginianus.* This species breeds in many of the wooded ravines well back in the mountains, but natural cavities in the larger trees are seemingly preferred to old hawks' nests, and I never had sufficient luck to find an occupied nest.

YELLOW-BILLED CUCKOO. *Coccyzus americanus americanus.* This species is fairly plentiful here in the open valleys. A nest found June 5, 1916, held three slightly incubated eggs, and was three feet from the ground in a small wild crabapple tree in a thicket at the edge of a short stretch of woods. It was loosely built of twigs, lined with fragments of dead leaves.

BLACK-BILLED CUCKOO. *Coccyzus erythrophthalmus.* This species is possibly as common as the preceding, and like it is seen very largely in the open valleys. A nest found May 27, 1916, held three slightly incubated eggs, and was six feet from the ground in a small red haw in a thicket at the edge of an open field. Another found a week or so later, on the 6th of June, held three small young in various stages of growth and one well incubated egg, and was five feet from the ground in a bush in a stretch of thick underbrush.

BELTED KINGFISHER. *Ceryle alcyon alcyon.* This species is plentiful here, and seen during the summer months about many of the numerous small streams in the open valley. A nest found May 10, 1916, held seven slightly incubated eggs, and was at the end of a four foot hole in a low bank facing a creek, a foot down from the top of the ground and four feet up from the water. Usually no nesting material is in evidence, but in this case the eggs were lying on a bed of fragments of the hard outer shells of crawfish.

HAIRY WOODPECKER. *Dryobates villosus villosus.* This species is a common breeding bird here, nesting both in the open valleys and well back in the mountains. Old orchards are favored spots during the spring months, the two nests that were found being both in apple trees in orchards, and within ten feet of the ground. One, on April 30, 1917, held four well incubated eggs ,while the other, on May 6, 1919, held four fresh eggs. In each case the female was incubating and refused to flush, being finally removed from the nest by hand.

DOWNY WOODPECKER. *Dryobates pubescens medianus.* This species is fairly common here, and like the preceding shows a marked preference for old orchards not only during the spring months but during the larger part of the year. A nest found May 14, 1919, held

six well incubated eggs, and was fifteen feet from the ground in a dead limb of a large apple tree. The male was incubating, and as is characteristic with this sex flushed even before the tree was reached.

Northern Pileated Woodpecker. *Phloeotomus pileatus abieticola.* It was on the 19th of October, 1915, that I saw one of these birds for the first time, although gradually I found they were fairly plentiful in the thicker stretches of woods on the mountain sides. My first nest was found at Charter Oak on the 11th of May, 1917, held on that date four slightly incubated eggs, and was forty feet from the ground in the trunk of a living white oak in open second growth timber part way up the side of a ravine. That they at times nested earlier than this was shown several years later when, on the 11th of May, 1919, a nest was found that held two newly hatched young, one hatching egg, and one egg that was infertile. It was twenty-five feet from the ground in the top of an old rotten pitch pine stub at the top of a ridge in fairly open second growth timber, with a cavity in spite of, or possibly because of, the rotten wood but ten inches deep. Another nest that on the 18th of May, 1919, held four practically fresh eggs was thirty feet from the ground in the trunk of a large living chestnut oak part way up a mountain side, and was unusually large, with a cavity fully two feet deep. In each case the female flushed readily when the tree was rapped, but usually remained close by protesting at my intrusion.

Red-headed Woodpecker. *Melanerpes erythrocephalus.* This species is quite plentiful here in the scattered short stretches of woods in the open valley about the town, but entirely wanting in the mountains. A nest found May 30, 1916, held four fresh eggs, and was thirty feet from the ground in a dead limb of a large black oak at the edge of a short stretch of woods. Another that on June 9, 1916, held four slightly incubated eggs was fifteen feet from the ground in a dead limb of an apple tree in an orchard.

Northern Flicker. *Colaptes auratus luteus.* This species is quite plentiful here, and found practically everywhere except in the thickest stretches of woods. The majority of the birds are incubating full sets of seven or eight eggs by the latter part of May, my earliest breeding record being that of a nest that on the 13th of May, 1917, held eight fresh eggs, and was six feet from the ground in the trunk of an apple tree at the edge of an open field.

Whip-poor-will. *Antrostomus vociferus vociferus.* This species occurs rather sparingly in the open valleys, but is plentiful in the

mountains where at dusk late in May it can frequently be heard "singing" on all sides.

NIGHTHAWK. *Chordeiles virginianus virginianus.* This species is one of the scarcest of the breeding birds here, and although a few were seen during the summer months I never succeeded in finding a spot where they were nesting.

CHIMNEY SWIFT. *Chaetura pelagica.* This species is a plentiful breeding bird here, especially about the town where the larger chimneys offer many suitable nesting sites. During the latter part of September thousands appear late each afternoon to roost in a chimney of one of the college buildings.

RUBY-THROATED HUMMINGBIRD. *Archilochus colubris.* This species is fairly plentiful here during the summer months, although seen more frequently about the town than in the mountains.

KINGBIRD. *Tyrannus tyrannus.* This species is a plentiful breeding bird here, few of the numerous orchards being without at least one pair. A nest found June 6, 1916, held four fresh eggs, and was twenty feet from the ground at the outer end of a limb of an apple tree at the edge of an orchard. That two broods are at times raised is evidenced by another nest found in much the same situation on July 4 of the same year that held two slightly incubated eggs.

CRESTED FLYCATCHER. *Myiarchus crinitus.* This species is less plentiful than the preceding but like it is found largely about the orchards where numerous cavities offer suitable nesting sites. Only rarely is it seen in the scattered short stretches of woods or on the mountain sides.

PHOEBE. *Sayornis phoebe.* This species is a plentiful breeding bird here, occurring practically everywhere there is a suitable nesting site. A favorite spot is a beam under a bridge crossing a stream, although old sheds, ledges of low cliffs and eaves of unoccupied buildings are frequently chosen. Two and frequently three broods are reared each year, my extreme dates being a nest found April 24, 1915, with five fresh eggs, and one that on June 4, 1916, held five slightly incubated eggs. The nests vary little in construction, being compactly built of green moss, a few grasses, wool when available, and mud, lined with fine grasses and horse hair.

WOOD PEWEE. *Myiochanes virens.* This species is also a plentiful breeding bird here, occurring in many of the scattered short stretches of woods about the town. A nest found June 9, 1916, held

three slightly incubated eggs, and was thirty feet from the ground at the outer end of a limb of a large white oak at the edge of a short stretch of woods.

Least Flycatcher. *Empidonax minimus.* This species is a rather scarce breeding bird here, and rarely seen during the summer months.

Prairie Horned Lark. *Otocoris alpestris praticola.* During the winter months this species occurs here in small restless flocks feeding in the open fields or on the roads, but early in March these flocks begin to break up, and by the middle of the month scattered pairs can be found in many of the open fields and pastures. I have seen singing males soaring overhead as early as the 11th of March, and it is no uncommon occurrence to find well incubated eggs with the ground white with snow. A nest found March 26, 1919, held five slightly incubated eggs, and was sunken level with the ground at the edge of a large field. It was compactly built of rootlets, weed stems and grasses, well lined with chicken feathers. Another found the same day held young fully a week old, and was far less substantially built of crushed fragments of weed stems and a little wool, although as before sunken flush with the ground in an open field.

Blue Jay. *Cyanocitta cristata cristata.* This species is rarely seen in the scattered stretches of woods about the town, but is fairly plentiful well back in the mountains. A nest found at Charter Oak on May 6, 1917, held six fresh eggs, and was twenty-five feet from the ground at the outer end of a limb of a large white pine at the edge of a clearing in the woods. It was compactly built of twigs, weed stems and grasses, lined with fine black rootlets.

Northern Raven. *Corvus corax principalis.* This species, one of the remnants of a vanished wilderness, still manages to survive in the less accessible mountain valleys, and while not increasing in numbers should be safe from actual extermination for a number of years yet. My first nest was found near Charter Oak, March 11, 1917, when there was still a foot of snow on the ground, and held on that date five fresh eggs. It was sixty-five feet from the ground near the top of a large white pine deep in the woods, and was compactly built of sticks, twigs and strips of bark, lined with soft inner shreds of bark and wool. The incubating bird apparently flushed before I reached the tree, but both soon appeared and showed considerable resentment at my intrusion, circling low overhead and croaking almost continuously. Another nest found March 22, 1919, held three incubated eggs, and was built on a

ledge of a cliff in a rugged gap in the mountains but three miles southwest of the town of State College. This nest had been used in previous years so was rather large, but otherwise, except for deer hair in the lining, was in construction much like the first.

Crow. *Corvus brachyrhynchos brachyrhynchos.* This species is an abundant breeding bird here, being found during the spring months in practically all the short stretches of woods in the open valley, and in many of the wooded ravines well back in the mountains. Possibly two broods are at times reared each year, for while full sets, varying in number from four to six eggs, can always be found the latter part of March and the first of April it is not uncommon to find fresh eggs late in May. My extreme breeding records are a nest that on March 29, 1917, held six slightly incubated eggs, and a nest that on May 20, 1919, held four fresh eggs. Nests varied in height from fifteen feet to at times fully sixty feet from the ground, the average, however, being between twenty-five and forty feet, and were in almost any hardwood or conifer that offered sufficient protection and concealment. Two situattions chosen that were somewhat out of the ordinary were a large black willow standing alone at the edge of a pond, and a small wild crabapple tree in a thicket well out in an open field.

Starling. *Sturnus vulgaris.* This species first appeared in Center County on the 29th of February, 1916, four birds being seen that day feeding at the edge of an open field. It was the following year, however, before the first pair nested here, although they were almost at once fairly plentiful, and are now one of the commonest breeding birds in and about the town. My first nest, found May 1, 1917, held five slightly incubated eggs, and was twenty feet from the ground in a cavity of a tree standing in the middle of an open field. Like others seen later it was rather bulkily built of coarse grasses and feathers. In 1919 these birds nested much earlier for a nest found on the 29th of April held four well incubated eggs, while in another, on the 6th of May, there were six half grown young.

Bobolink. *Dolichonyx oryzivorus.* This species is a fairly plentiful breeding bird here, nesting late in May in the open fields about the town.

Cowbird. *Molothrus ater ater.* This species is by no means plentiful here during the summer months, and only at infrequent intervals have I found its eggs in nests of the smaller birds. My earliest breeding record is that of a single fresh egg found in a Phoebe's nest on May 3, 1917, that also held three fresh eggs of the rightful owner.

Red-winged Blackbird. *Agelaius phoeniceus phoeniceus.* This species is a very plentiful breeding bird here, small colonies nesting in many of the scattered swamps and marshy meadows about the town. Domestic duties are well under way by the middle of May, and it is possible then, and until the first of June, to find eight or ten nests with eggs, in marshes of more or less limited area. My earliest breeding record is a nest that held four fresh eggs on May 12, 1919, although I have never failed to find full sets of four, or rarely three, fresh eggs by the 16th of that month. Nests vary but little in situation, being either in the cat-tails or in the thick marsh grass, and are built of reeds, pieces of cat-tails and the marsh grass, with a lining of fine grasses and, at times, a little horse hair.

Meadowlark. *Sturnella magna magna.* This species is plentiful here during the summer months, breeding in many of the open fields about the town. A nest found May 19, 1919, held six fresh eggs, and was sunken a little in the ground in a clump of green grass near the middle of a large field of winter wheat.

Orchard Oriole. *Icterus spurius.* This species is a fairly plentiful breeding bird here, occurring during the summer months in many of the scattered apple orchards. A nest found June 6, 1916, held four slightly incubated eggs, and was twenty feet from the ground at the outer end of a limb of an apple tree near the edge of an orchard.

Baltimore Oriole. *Icterus galbula.* This species is more plentiful than the preceding, and while fairly common about the town shows a like preference for old apple orchards. A nest found June 5, 1916, held five fresh eggs, and was but six feet from the ground at the extreme end of a limb of an apple tree in an orchard.

Purple Grackle. *Quiscalus quiscula quiscula.*

Bronzed Grackle. *Quiscalus quiscula aeneus.* Both these species are equally plentiful here, and as they nest together, and even at times interbreed, it is only by actually collecting the incubating bird that a nest could be satisfactorily identified. Old apple orchards are favored spots during the spring months, although scattered pairs can be found throughout the town, nesting in the upper branches of such trees as Norway spruces and cottonwoods. Only once have I noted them colonizing, fifteen pairs being found on May 7, 1919, nesting in the upper branches of a large white pine standing at the edge of an open field. The nests varied from twenty-five feet to fully fifty feet from the ground, and were invariably at the outer ends of the larger limbs. A

few held young several days old, while in the others there were eggs either fresh or in various stages of incubation. But one brood is reared each year, my extreme breeding records being a nest that on April 29, 1919, held six slightly incubated eggs, and one that on May 12, 1919, held five fresh eggs.

GOLDFINCH. *Astragalinus tristis tristis.* As it is the latter part of July before this species breeds here my experience with it was rather limited, but I found it quite plentiful during my one summer, 1920, at State College. My first nest, found August 1, held on that date five fresh eggs, while in the following three weeks seven other nests with eggs were, with little effort, located in and about the town, the latest, on August 19, holding six slightly incubated eggs. They varied in height from six to forty feet from the ground, the average being between fifteen and twenty feet, and there was apparently little preference for any certain tree, other than that conifers were consistently avoided. All were compactly built of gray plant fibres, shreds of bark, fine weed stems and plant down, well lined with thistle down and, in one case, horse hair.

ENGLISH SPARROW. *Passer domesticus.* This undesirable but persistent species is plentiful in and about the town, and nests everywhere and in quite varied situations. Apple orchards are favored spots, and unless well out in the open country such species as Bluebirds and Crested Flycatchers are soon driven away. Natural cavities are usually selected, although where these are scarce large unsightly nests are built in the upper branches. My extreme breeding records are a nest that on April 15, 1916, held five fresh eggs, and one that on August 13, 1920 held four half grown young. This latter nest was somewhat out of the ordinary, an old Robins' nest on a beam against the side of a building having been merely well lined with large chicken feathers, and no attempt made to arch over the top with grasses and weed stems.

VESPER SPARROW. *Poöecetes gramineus gramineus.* This species is plentiful during the summer months in the open fields about the town. My earliest breeding record is a nest found April 30, 1919, that held four fresh eggs, and was in a depression in the ground in a thick clump of grass at the edge of a large open field. Other years it has been the first week in May before full sets of fresh eggs were found, and in 1916 I found my first nest with four slightly incubated eggs as late as the 16th of May. Nests are rather unsubstantially built of weed stems, rootlets and grasses, with a lining of finer grasses and horse hair.

Savannah Sparrow. *Passerculus sandwichensis savanna.* This species breeds very sparingly in a few of the larger open fields about the town, but I personally was never fortunate enough to find or actually see a nest.

Grasshopper Sparrow. *Ammodramus savannarum australis.* This inconspicuous little sparrow is plentiful during the summer months in the open fields and pastures about the town. A rather late breeding record is that of a nest found July 28, 1920, that held three fresh eggs, and was sunken in the ground, and very well concealed, in the middle of a large open field.

Henslow's Sparrow. *Passerherbulus henslowi henslowi.* At present this species is known to breed at only one spot here, a marshy meadow in the open valley near Charter Oak. I have noted it there each year the latter part of April or the first of May, but while several nests have been found I was never fortunate enough to actually see one.

Chipping Sparrow. *Spizella passerina passerina.* This species is a plentiful summer resident here, both about the town and in the open valleys. Such conifers as the red cedar are given preference as a nesting site, but apple orchards are seldom without at least one pair, and bushes at the edges of thickets are chosen at times. The nests are never over ten feet from the ground, and often up but a foot or two. Fresh eggs can always be found by the middle of May, my earliest breeding record being a nest that on May 11, 1916, held four fresh eggs.

Field Sparrow. *Spizella pusilla pusilla.* This species is an equally plentiful summer resident here, with a preference for fields and pastures overgrown more or less with scrubby underbrush. Old apple orchards, however, are likewise much favored. The nests found were usually on the ground, fairly well concealed in thick clumps of grass or weeds, an exception being one that was five feet up in a small bushy red cedar at the edge of an open field. My earliest breeding record is a nest that on May 13, 1916, held four fresh eggs, the others noted being between that date and the first of June.

Song Sparrow. *Melospiza melodia melodia.* This species is quite plentiful here during the summer months about thickets and underbrush bordering open fields. Two and possibly three broods are reared each year, and it is interesting to note that the first nests are invariably on the ground, well concealed in thick grass or weeds, while in

late spring and early summer the nests are built in bushes or vines often as much as six feet from the ground. My extreme breeding records are a nest that on May 4, 1916, held five slightly incubated eggs, and one that on August 8, 1920, held three fresh eggs.

Towhee. *Pipilo erythrophthalmus erythrophthalmus.* The distribution of this species here proved somewhat of a surprise to me for it consistently avoids, during the summer months, thickets and underbrush in the open valleys and breeds only on the more open mountain sides. A nest found May 28, 1916, held five incubated eggs, and was on the ground at the foot of a small laurel bush in scrubby underbrush at the top of a ridge.

Cardinal. *Cardinalis cardinalis cardinalis.* This species is fairly plentiful in the ravines well back in the mountains where the dense rhododendron thickets afford suitable conditions, but like the preceding is never seen in the more open valleys.

Indigo Bunting. *Passerina cyanea.* This species is a plentiful summer resident in the more open valleys, occurring about thickets and underbrush in the scattered short stretches of woods. It breeds rather late, my earliest record being a nest that held three fresh eggs on June 9, 1916.

Scarlet Tanager. *Piranga erythromelas.* This species is fairly plentiful during the summer months on the mountain sides but is never seen then in the stretches of woods in the open valleys.

Cliff Swallow. *Petrochelidon lunifrons lunifrons.* This species is rather scarce here as a breeding bird for I know of but two small colonies, one at Oak Hall and the other near Charter Oak, that return each year to the same barns. At the latter spot four nests were noted on June 4, 1916, three practically built and the other with three fresh eggs.

Barn Swallow. *Hirundo erythrogastra.* This species is a plentiful summer resident in the open valleys, there being few barns on the scattered farms in which at least one pair cannot be found nesting then. Fresh eggs can usually be found shortly after the middle of May, my earliest breeding record being a nest that on May 18, 1916, held five slightly incubated eggs.

Tree Swallow. *Iridoprocne bicolor.* I know of but one spot where this species breeds here, the small pond at Scotia affording suit-

able nesting sites in several old stubs standing well out from the shore. I unfortunately was not aware at the time that two pairs were nesting here each year, so have no definite data now to this effect.

Rough-winged Swallow. *Stelgidopteryx serripennis.* This species is fairly plentiful during the summer months in the open valleys, scattered pairs breeding in the low banks bordering the numerous small streams. A nest found May 30, 1916, held six slightly incubated eggs, and was at the end of a one foot hole in such a bank facing a shallow creek flowing through a pasture.

Cedar Waxwing. *Bombycilla cedrorum.* This species is fairly plentiful here as a breeding bird but as it nests rather late in the spring my records are rather meager. A nest found July 4, 1916, held five somewhat incubated eggs, and was twenty feet from the ground in a crotch of one of the limbs of a tree on the college campus. It was rather shabbily built of twigs and catkins, with a lining of fine grasses.

Red-eyed Vireo. *Vireosylva olivacea.* This species is fairly plentiful during the summer months both in the scattered stretches of woods in the open valleys and on the mountain sides.

Warbling Vireo. *Vireosylva gilva gilva.* This species is likewise plentiful during the summer months in the open valleys where it shows a decided preference for the larger willows fringing the streams. My one breeding record is that of a nest found May 31, 1916, that held four slightly incubated eggs, and was ten feet from the ground at the outer end of a limb of a large apple tree at the side of a road. It was compactly built of grasses, plant fibres, feathers and bits of wool, lined with fine grasses.

Yellow-throated Vireo. *Lanivireo flavifrons.* Scattered pairs of these birds can be found during the summer months in the short stretches of woods in the open valleys where they nest in the upper branches of the larger trees.

Blue-headed Vireo. *Lanivireo solitarius solitarius.* This species breeds very sparingly in the secluded ravines well back in the mountains and only about Charter Oak have I seen it during the summer months.

Black and White Warbler. *Mniotilta varia.* This species is fairly plentiful during the summer months on the mountain sides but rarely ventures then into the open valleys.

Worm-eating Warbler. *Helmitheros vermivorus.* I was rather interested to find this Carolinian bird far from scarce about Charter Oak, scattered pairs nesting in many of the wooded ravines.

Golden-winged Wabrler. *Vermivora chrysoptera.* This species nests in overgrown clearings or pastures on the mountain sides, and is somewhat scarce as a breeding bird.

Northern Parula Warbler. *Compsothlypis americana pusilla.* I have seen this species during the summer months only about Charter Oak where a pair or two nest in the larger hemlocks bordering the streams.

Yellow Warbler. *Dendroica aestiva aestiva.* This species is a common summer resident in the open valleys, frequenting apple orchards and underbrush fringing the larger streams. My earliest breeding record is a nest that held five slightly incubated eggs on May 27, 1916, and was eight feet from the ground in a small apple tree at the edge of an orchard.

Black-throated Blue Warbler. *Dendroica caerulescens caerulescens.* This species can be found rather sparingly during the summer months in rhododendron thickets in ravines in the mountains.

Chestnut-sided Warbler. *Dendroica pensylvanica.* This species is fairly plentiful during the summer months in clearings on the mountain sides that are partially overgrown with scrubby underbrush.

Blackburnian Warbler. *Dendroica fusca.* This species breeds rather sparingly in the ravines in the mountains, scattered pairs being found during the summer months in the larger hemlocks and white pines bordering the streams.

Black-throated Green Warbler. *Dendroica virens.* This species occurs in much the same situations as the preceding, but is far more plentiful and is frequently found well up the mountain sides.

Pine Warbler. *Dendroica vigorsi.* This species can be found during the summer months on the open south slopes of the mountain ridges where it nests in limited numbers in the larger pitch pines that are scattered here and there.

Oven-bird. *Seiurus aurocapillus.* This species is a plentiful summer resident on the mountain sides, but only during migrations ventures into the scattered stretches of woods in the open valleys.

Louisiana Water-Thrush. *Seiurus motacilla.* This species is a plentiful summer resident in the mountains, there being few streams

without at least one pair. A nest found May 16, 1919, in Laurel Run held five well incubated eggs, and was well concealed under a projecting root on a low bank at the side of a stream flowing through dense rhododendron thickets. It was rather bulkily built of dead leaves and grasses, lined with fine grasses.

Maryland Yellow-throat. *Geothlypis trichas trichas.* This species is plentiful during the summer months in the open valleys, frequenting thickets and underbrush bordering the numerous streams.

Yellow-breasted Chat. *Icteria virens virens.* This species is plentiful during the summer months both in thickets and underbrush in the open valleys and in overgrown clearings on the mountain sides. My earliest breeding record is a nest found May 31, 1915, that held three fresh eggs, and was in a thicket at the edge of a short stretch of woods.

Hooded Warbler. *Wilsonia citrina.* This handsome warbler is plentiful during the summer months in thickets of rhododendron and laurel on the mountain sides. Two nests that were found were both a few feet from the ground in small rhododendrons near streams. One held four fresh eggs on June 3, 1915, and the other four fresh eggs also on June 8, 1916.

Canada Warbler. *Wilsonia canadensis.* This species is a fairly plentiful summer resident here, and occurs in much the same situations as the preceding. A nest found June 3, 1915, held four slightly incubated eggs, and was very well concealed in a mass of dead leaves that had lodged in a few small shoots at the foot of a large tree growing at the side of a stream in a tangled rhododendron thicket.

Redstart. *Setophaga ruticilla.* This species proved unexpectedly scarce as a breeding bird, but a very few being noted during the summer months in ravines in the mountains.

Catbird. *Dumetella carolinensis.* This species is a plentiful summer resident here, occurring in thickets and underbrush at the edges of the scattered short stretches of woods or bordering open fields. A characteristic breeding record, both as to date and situation, is a nest found May 29, 1915, that held five slightly incubated eggs, and was two feet from the ground in a small haw bush at the edge of a thicket.

Brown Thrasher. *Toxostoma rufum.* This species is equally plentiful and occurs in much the same situations as the preceding. My earliest breeding record is a nest found May 7, 1915, that held four

slightly incubated eggs, and was five feet from the ground in a small wild crabapple tree in a thicket at the edge of a short stretch of woods. Only rarely is a nest placed on the ground, my one instance of such an occurrence being a nest that when found June 2, 1915, held four half grown young and was well concealed in a stretch of tall weeds in rather open woods.

Bewick's Wren. *Thryomanes bewicki bewicki.* This species breeds rather sparingly here, scattered pairs being found during the summer months about the old sheds or unoccupied houses where the nest is invariably built. A nest found May 18, 1919, at Charter Oak held seven slightly incubated eggs, and was under the eaves of a cabin at the side of a road near the foot of the mountain. It was compactly built of twigs, weed stems, pieces of rotten wood, and dead leaves, lined with bits of wool, chicken feathers, a few horse hairs, and fragments of a cast off snake skin.

House Wren. *Troglodytes aedon aedon.* This species is a plentiful summer resident here, occurring both in and about the town as well as in the numerous orchards in the open valleys. A characteristic breeding record, both as to date and situation, is a nest found May 31, 1916, that held six slightly incubated eggs, and was five feet from the ground in a cavity in the trunk of a large apple tree in an orchard.

White-breasted Nuthatch. *Sitta carolinensis carolinensis.* This species is one of the most characteristic birds of the scattered short stretches of woods in the open valleys, one pair at least, frequently two, being found in each one. Nesting is well under way by the middle of April, and by the latter part of that month or the first of May these birds are incubating full sets of from seven to nine eggs, the last being actually the commoner number. The nests are invariably in knot holes in the trunks of the larger trees, varying in height from fifteen to fifty feet from the ground, the cavity itself being six to eight inches in depth, and usually six inches from the entrance. The nests are substantial matted beds of soft shreds of inner bark and rabbits' fur, with rarely a little wool, cow hair, and chicken feathers. But one brood is reared each year. My earliest breeding record is that of a nest found April 27, 1917, that held eight slightly incubated eggs.

Tufted Titmouse. *Baeolophus bicolor.* I found this species decidedly scarce here, but apparently slowly increasing in numbers, so it is possible that in time it may be fairly plentiful as a breeding bird.

Chickadee. *Penthestes atricapillus atricapillus.* This species is plentiful throughout the year on the mountain sides but, especially during the summer months, rarely ventures into the short stretches of woods in the open valleys. A nest found May 14, 1916, held seven fresh eggs, and was three feet from the ground in an old rotten poplar stub at the side of a road in a wooded ravine. Another, found May 18, 1919, at Charter Oak, held six slightly incubated eggs, and was four feet from the ground in a fence post at the edge of a clearing.

Wood Thrush. *Hylocichla mustelina.* This is another species that strangely enough shuns the scatered stretches of woods in the open valleys where conditions would seem entirely suitable for it to breed, and can be found during the summer months only in secluded ravines on the mountain sides. Here, however, it is fairly plentiful. Three nests noted June 3, 1915, held each four incubated eggs, and were five feet from the ground in rhododendrons near small streams.

Robin. *Planesticus migratorius migratorius.* This familiar bird is very plentiful here during the summer months, occurring everywhere there is any open country and avoiding only the deeper stretches of woods on the mountain sides. Two and possibly three broods are reared each year, my extreme breeding records being a nest with three slightly incubated eggs found April 16, 1919, and one that on July 4, 1916, held four fresh eggs. Full sets of three or four eggs, either number being equally common, can, however, be found at almost any time between these two dates. The nests are placed in almost any situation that affords sufficient concealment and protection, having been noted on the cross arms of telephone poles, on beams in sheds and barns, under bridges crossing small streams, on rain spouts under the eaves of buildings, as well as in practically any tree or bush, the height from the ground varying here from five to thirty feet.

Bluebird. *Sialia sialis sialis.* This species is plentiful during the summer months both in the open valleys and about the farms well back in the mountains. Old apple orchards are favored spots in which to breed, while the scattered short stretches of woods usually offer sufficient inducements for at least one pair. Two and possibly three broods are reared each year, my extreme breeding records being a nest found April 16, 1915, that held five fresh eggs, and one that on August 1, 1920, held three somewhat incubated eggs.

U. S. Biological Survey,
Asheville, North Carolina.

THE WILSON BULLETIN

Published at Sioux City, Iowa, by the Wilson Ornithological Club.

The present editorial organization is as follows: T. C. Stephens, Editor-in Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

The subscription price in the United States is $1.50 a year, and 50 cents a number; in all other countries of the International Postal Union the price is $2.00 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Dr. Jesse M. Shaver, Peabody College, Nashville, Tennessee, U. S. A.

EDITORIAL

THE FOLLOWING FIGURES for the last five meetings show interesting comparisons. The most gratifying figures are those showing the out-of-town attendance at the annual meetings. Naturally, our attendance at the Cleveland meeting included good representations from Ohio, Pennsylvania, Michigan, and the Virginias; we were glad to have so good a showing from the Atlantic states and the District of Columbia. Mrs. H. J. Taylor, who came all the way from Berkeley, California, probably made the best record for distance.

In looking over the register of attendance, the writer was chagrined to find the names of many persons of whom he has known or with whom he has had correspondence, and of whose presence at this meeting he was not aware at the time. One of the greatest privileges in attending these meetings is the opportunity of making new acquaintances. We are not quite ready to go to a three-day program; and we will be reluctant to curtail the number of papers on the program. Therefore, we recommend to our officers that in planning future meetings a good deal of thought be given to ways and means of getting acquainted—in the midst of so much activity.

	Chicago 1926	Nashville 1927	Ann Arbor 1928	Des Moines 1929	Cleveland 1930
Local attendance	37	32	31	106	41
Out-of-town attendance	75	43	75	96	122
Total attendance	112	75	106	202	163
Dinner attendance	61	46	50	77	98
Titles on the program	23	34	24	36	33
Honorary members	4	4	4	9	7
Life members				5	7
Sustaining members	73	68	64	66	58
Active members	216	244	248	245	227
Associate members	327	347	383	397	479
Total members	620	663	702	717	775
Total receipts	$1753	$1638	$1981	$2167	$2451

NEW ORLEANS has been selected as the meeting place for this year. The dates will probably be Monday and Tuesday, December 28 and 29. Many of our members will undoubtedly wish to take this occasion to visit this historic old city. Reduced railroad fare (one fare and a half) will be available as usual for this trip. Announcements concerning special attractions will be made in succeeding issues.

THE JANUARY (1931) issue of the *Auk* contains a Platform of the A. O. U. Committee on Bird Protection. This platform consists of six articles embodying what are regarded by the Committee as the most fundamental principles in bird conservation. The six general principles are: 1) education, 2) prevention of extermination, 3) opposition to bounties and organized shooting campaigns, especially on birds of prey, 4) opposition to the introduction of exotic species, 5) control of destructive agencies arising with the progress of civilization, 6) legislative regulation. The platform has not, apparently, been as yet adopted by the American Ornithologists' Union, though little doubt can be entertained that it will be adopted. The only division likely to arise will be when the general principles are applied to some concrete proposal. The Committee consists of: Dr. H. C. Bryant, chairman, A. C. Bent, Florence Merriam Bailey, Bayard H. Christy, Stanley G. Jewett, Hoyes Lloyd, Edward A. Preble. And we know enough of the personnel of this committee to have complete confidence in their zeal for *honest* conservation and sane protection.

Not long ago the WILSON BULLETIN (XLI, September, 1929, page 189) made a plea for just such a statement of principles by ornithological societies, and the American Ornithologists' Union has demonstrated its leadership. Now, it seems to us that it would be appropriate for the Wilson Ornithological Club, or any other society interested in bird protection, either to ratify and adopt this same platform, or to put in motion the machinery necessary to formulate one of its own.

WE ARE very much interested in a bit of publicity in behalf of the birds of prey which has been undertaken by the Brodie Bird Club, of Toronto. This organization has been furnishing a short daily article on "Our Birds of Prey" to the *Toronto Globe*. These articles average about two hundred words in length, and have a double-column display heading. Apparently all phases of the ecological relations of the birds of prey are to be discussed in this series. It is indeed a splendid educational program. The *Toronto Globe* and the Brodie Bird Club are to be congratulated for carrying out such a concrete effort in defense of the wild life of the continent. It is altruistic and economic.

What a fine thing it would be if each local bird club in America should engage its members to prepare twenty-five to fifty brief and incisive articles on the birds of prey, and then arrange with the local newspaper of largest circulation to run the series daily as a special feature. We have no doubt that many papers would be glad to coöperate—to the enjoyment of the readers and great benefit to wild life.

IN 1930 the WILSON BULLETIN received for publication a letter of complaint against the Fish and Game Department of the State of Arkansas for encouraging the destruction of various birds of prey in that state. It was our intention to publish the letter, but before we got to it we received, about four months later, another letter from the same writer stating that the Fish and Game Department had been converted to a less drastic policy, and requesting the withdrawal of the first letter. Thus, a great deal can be done for the native wild life of the country if those who are interested and informed will take the trouble to disseminate the interest and information.

We Are Pleased to publish in this issue a paper by Mr. Manly F. Miner. It deals with the history of Jack Miner's work in banding wild geese, in which he has had remarkable success. This account places Jack Miner as one of the pioneers in the systematic trapping and banding of birds—in fact he may be the pioneer. At any rate no one else has caught and banded so many wild geese, to say nothing of ducks and song birds. No doubt this work has added much to our knowledge of the migration of the Canada Goose. There may be some question as to what extent these birds are drawn out of their normal route of migration by the regular food supply in the Jack Miner Sanctuary; but the terminals are at least established.

It was our privilege last December to hear Jack Miner lecture on himself and his work with the birds. Jack Miner is a dynamic personality, and his story is a fascinating one. He held his audience of seven or eight hundred people for two hours and ten minutes, and apparently they would have remained longer to listen to him. His talk is interspersed with humor, facts, a good deal of feeling, a little prejudice, and a whole lot of the homely philosophy of life which makes Jack Miner who he is and what he is. He is dead set against the Crow and hawks in general—several Canadians seem to get this slant on the matter. But we have decided that Jack Miner is a remarkable man, and that he has a message of general interest to the bird lovers, to sportsmen, to outdoor enthusiasts, to indoor habitues, and to most people. His lecture in Sioux City seemed to please the sportsmen as much as the bird lovers, and the latter as much as the former—which leads us to think that perhaps there is not so much of a gulf between the two groups as we are sometimes told there is. If these two forces would ever harness up together in the interest of real conservation, wouldn't it be great for the wild life of America!

The Death Knell of conservation organizations is rung when they begin to employ salaried executives. If not death, at least look for gangrene. And what does the surgeon advise in this case?

We Have advance information of the forthcoming publication by the Museum of Comparative Zoology of a "Check-list of the Birds of the World," by James Lee Peters. The completed work will consist of about ten volumes, and will be sold for about five dollars per volume. The first volume, soon to be ready, will contain about three hundred genera with seventeen hundred species and subspecies. This will be an up-to-date work similar to Sharpe's Hand-list published in 1899.

We Wish to call attention to our small, but growing, endowment fund, which is shown in the report of the Treasurer. One more life membership will bring the fund up to the minimum required for deposit with the trust company with which we have a contract.

GENERAL NOTES

Conducted by M. H. Swenk

The Golden Eagle in Southeastern Iowa.—On October 20, 1930, a Golden Eagle (*Aquila chrysaetos*) was brought in to Iowa Wesleyan College, having recently been killed about five miles east of Mt. Pleasant by a sixteen-year-old boy, while it was apparently attempting to feed on duck decoys. The bird seemed to be a young one of about medium size, having a wing length of twenty-four and three-fourths inches.—H. E. JAQUES, *Iowa Wesleyan College, Mt. Pleasant, Iowa.*

The Carolina Wren in Northwestern Iowa.—While I was in Onawa, Iowa, forty miles south of Sioux City, on August 28, 1930, I heard the song of the Carolina Wren (*Thryothorus ludovicianus*). On the next two days I heard the song many times, and also had several good looks at the bird. As far as I can determine, the Carolina Wren has been reported previously in this region only twice, and not in recent years.—WM. YOUNGWORTH, *Sioux City, Iowa.*

Unusual Food of the Baltimore Oriole.—While looking from a window on July 23, 1930, the writer saw three immature Baltimore Orioles (*Icterus galbula*) clinging to the tall hollyhock stocks that were growing along the side of the house. Close watching showed that these birds were pecking into the newly formed pericarps of the hollyhocks and were greedily eating the soft, tender seeds. One of the birds after a time left the above food and started to eat the centers out of the blooming flowers. Probably insects in the flowers caused this last action, but the eating of the soft seeds of the hollyhock was a new oriole food to the writer.—WILLIAM YOUNGWORTH, *Sioux City, Iowa.*

The Pugnacity of a Nighthawk.—One early June morning in 1929, I observed two Nighthawks (*Chordeiles virginianus*) flying in wide circles and quietly catching insects. As they flew over the wires of a highline, a common Kingbird (*Tyrannus tryannus*) flew up from his perch and attacked the closest Nighthawk. The second Nighthawk came at once to the rescue and darted savagely at the Kingbird, driving it down to the wires. This action was repeated several times, whenever the Nighthawks flew near the Kingbird. In each case the Kingbird would attack the first Nighthawk and the second one would immediately dash down and drive the Kingbird back to his perch. The Nighthawk will at times defend its nest by dashing at the intruder, but this was the first time I had ever noticed one attacking another bird.—WILLIAM YOUNGWORTH, *Sioux City, Iowa.*

An Early Hour's Bird List.—I would like to place on record a list of birds heard between 6:30 and 7:30 o'clock on the morning of May 12, 1929, while I was still in bed. I would like to hear from places where a similar or larger list can be made. The weather was mild, with a gentle rain falling. Here it is: A cock Pheasant crowing, Flicker, Red-headed Woodpecker, Blue Jay, Bronzed Grackle, Baltimore Oriole, White-throated Sparrow, Purple Martin, Brown Thrasher, Tufted Titmouse, House Wren, Olive-backed Thrush, and Robin. After getting up, the Goldfinch and Chimney Swift were added immediately. When I am away from home, say in Texas or in northern Wisconsin, it is always a source of enjoyment to make mental note of the bird voices heard early in the morning, before getting up, and then jotting them down in the book. One gets some peculiar, even startling, combinations, depending on the place and time of year.—C. W. G. EIFRIG, *River Forest, Ill.*

Traill's Flycatcher Nesting at Sioux City, Iowa.—While the migration of the small flycatchers is usually quite noticeable in this region, the presence of nesting small flycatchers is rather uncommon. During June and July, 1930, the writer found at least three pairs of Traill's Flycatchers (*Empidonax traillii*) within the city limits. The identification of the birds was kindly verified by Dr. T. C. Stephens. On August 4, young birds just out of the nest were seen as they were being fed by the parents. This species will be watched with interest to see whether it is a regular summer resident, or is an irregular summer visitor. —Wm. Youngworth, *Sioux City, Iowa.*

An Oddly Colored Harris's Sparrow.—While making a field trip in a favorable locality near Sigourney, Iowa, on October 19, 1930, I saw considerable numbers of Tree Sparrows, Slate-colored Juncos, Song Sparrows, White-throated Sparrows and Harris's Sparrows, merged to some extent in one general flock. There were present also a few Cardinals, Chickadees, and Tufted Titmice to add color and animation to the scene.

But what particularly attracted my attention was the very peculiar color of one of the Harris's Sparrows (*Zonotrichia querula*). There were eight or ten of these birds in the flock. The juveniles could easily be distinguished by the absence of black in their plumage. All but one of the adults showed the usual black crown and black throat patches. However, this odd bird's entire head and neck were black. Approximately the same area of this bird's plumage that is red in the adult Red-headed Woodpecker was solid black. It would be interesting to know if any of the other readers of the Wilson Bulletin have ever noticed this peculiar coloration in a Harris's Sparrow.—E. D. Nauman, *Sigourney, Iowa.*

Cavity-Nesting Robins.—On May 19, 1929, while in a sparsely tree-covered pasture, seated near a tree which annually harbors a nesting pair of Red-headed Woodpeckers, a bird, presumedly a Starling (as viewed from a distance), was seen to enter a woodpecker nesting cavity. With a desire to obtain an unquestionable identification, the tree was approached and vigorously rapped—but in vain. It was not until the ascent was well in progress that a boisterous Robin (*Planesticus migratorius migratorius*) emerged from the cavity, which was located some twenty feet from the ground. Upon examination, amidst protests from the parent birds, the cavity (which had been enlarged by decomposition) was found to contain a typical mud structure and two naked young Robins. A second hole had been provided by decay, which served as an exit. A second instance of a similar placing of the nest by a Robin has since been brought to my attention. In this case one room of a four-compartment Purple Martin house had been utilized by the birds as a place to bring forth their offspring.

Lack of suitable natural nesting places, coupled with the idiosyncrasies of birds, should account for such peculiar selections.—Paul A. Stewart, *Leetonia, Ohio.*

Nesting of the Starling in the Chicago Region.—On April 16, 1929, while out with a class of boys, the writer saw three Starlings (*Sturnus vulgaris*) in Thatcher's woods in River Forest, a western suburb of the great metropolis. Not seeing them again on subsequent visits, nothing was thought of the occurrence. On May 21, however, we again saw a Starling, this time on the opposite side of the DesPlaines River, in a tree at the water's edge. The bird flew over to our

side of the river, carrying something in its bill. I marked the spot, and after about a half hour came back to it. To my surprise there was a young Starling, almost fully grown, looking out of an old woodpecker hole about twenty-five feet up in a dead tree, which was broken a few feet above the hole and had no branches whatever. Soon the adult male Starling came and fed the youngster. One or two more seemed to be inside, because they could be seen making ineffectual attempts to get their head out of the hole. So far as the writer is aware this is the first authentic instance of the nesting of the Starling in the immediate vicinity of Chicago.

In 1928, Mr. C. A. Eickemeyer, a teacher near Crete, Illinois, thirty miles south of Chicago, described to the writer some birds new to him that had nested in his orchard. From the description it was at once apparent that the birds had been a pair of Starlings, the gentleman in question being also perfectly familiar with our native birds. This year (1929) he again notified me that they had arrived and were starting nesting operations. I have heard of similar instances in 1928 from near Waukegan. This, therefore, registers another gain of breeding territory in the westward march of this species.—C. W. G. Eifrig, *River Forest, Illinois.*

Winter-Killing of Barn Owls in Wisconsin.—A Barn Owl (*Tyto alba pratincola*) was picked up dead in what is known as the Shorewood Quarry, west of Madison, Wisconsin, on February 10, 1930. Four days later another owl of the same species was found within sixty yards of the one first mentioned. Both owls had the appearance of having been dead for a week or more. They were lying on the ground at the base of the quarry face, in the crevices of which face they had been accustomed to roost. A careful post-mortem disclosed that these birds had not met death from shooting or from direct mechanical injury of any sort. Though lean, they were not emaciated. Their alimentary tracts were quite empty, except for a small amount of fecal material in the intestine of one of them.

Barn Owls are rare in Wisconsin, but the presence of these two in the quarry had been known for some months, and their pellet accumulations had been gathered from time to time for food habits study. It had been noted, as the winter had progressed, that the pellets had been becoming smaller, due presumably to the protection afforded mice and shrews by the snow. Many of the pellets last deposited contained remains of but a single meadow mouse (*Microtus*), instead of the three to six small mammals making up a full size pellet. The owls were apparently unable to take advantage of the winter population of small birds; at least, they had not done so.

Madison and environs had experienced the coldest weather of the season during the last half of January, the temperature having dropped as low as 24 degrees below zero. The inference is that a scarcity of food, coincident with the cold weather, proved too much for these individual owls.—Paul L. Errington, *Madison, Wisconsin.*

A Hint on the Character of Catbirds.—While bird banding in the spring of 1929 I had the unusual experience of catching the same Catbird (*Dumetella carolinensis*) three times in one day in the same trap. The trap was located in our back lot in a clump of elderberry bushes, where later in the year Catbirds could always be seen devouring the juicy berries. It was an ordinary pull-string drop-trap, equipped with a broken stick as support. As bait a mixture of bread

crumbs, canary seed, and sunflower seed was spread under it. The Catbirds seemed to prefer the bread crumbs.

The bird was first caught on the morning of May 17. His mate (?) was attempting to employ my pull-string to use in her nest, which was being constructed near by, and so jerked the trap down when Mr. Catbird was feeding. He was released, seemingly unperturbed, with band No. A136809. The same bird entered the trap twice later in the day and both times was captured. The bird at all times seemed very nonchalant and when released immediately made off. The next day he was caught again, together with another Catbird, presumably his mate, and the one who was responsible for his capture the day before. She was given band No. A136811. Bird A136809 made his last appearance on May 20 when his mate (?) was again responsible for his capture in the same way as when first caught. Bird A136811 put in an appearance at the same trap a day later and was very frightened upon release. Perhaps a reason for the frequent captures of A136809 and a few other Catbirds at other times was the fact that immediately upon capturing a heavy robe was spread over the trap, shutting out all light and thus keeping the birds from excitement and fluttering. The fact that this was not possible when A136811 was caught the second time may have accounted for her fear. The question is, are Catbirds more than other species apt to be less excitable and consequently more likely to reappear at the trap?—Ben K. Polk, *Des Moines, Iowa.*

An Interesting Green Heron Colony.—On June 9, 1929, Mr. E. L. Jacobs and I visited a small pond about seven miles southeast of Vicksburg, Michigan. This pond, with an area of about a half acre, is nearly surrounded by two high hills and at that time contained about eighteen inches of water. The north half has grown up to a thick mass of button bush eight to ten feet high. As we approached the pond two Green Herons (*Butorides virescens virescens*) flew from the bushes. Having our boots we waded through this thick mass of tangled brush, and to our surprise found twelve nests of this heron, containing altogether thirty-two eggs and thirteen young. I banded one young, the others being too small.

We decided to visit this place again in two weeks, and on June 23 we did so, and banded twenty-one young which included all the young birds that were hatched, but there were more nests with eggs in them. Two weeks later, on July 7, we again visited the pond and banded fifteen more young and still found more nests with eggs. On July 21, I visited the place alone, as Mr. Jacobs was unable to accompany me. On this trip I banded nineteen young and there were three more nests containing a total of eleven eggs. Much to our regret neither of us was able to visit the place again before the young left.

We banded a total of fifty-six young, and on my visit of July 21 the bushes were alive with young banded birds. This was the largest and most interesting colony of Green Herons it has ever been my privilege to observe. We never saw more than five adult birds near this pond at any one time, so no doubt each pair raised two or more broods in a season.

We also found several nests of the Mourning Dove, Red-winged Blackbird, Bronzed Grackle, and one place where a Sora had nested, a single infertile egg still remaining in the nest.—F. W. Rapp, *Vicksburg, Michigan.*

An Unusual Nest of the Ruddy Duck in Montana.—On July 2, 1930, while checking up on the condition of about thirty nests previously found at Barnaby Lake, near Fortine, Montana, my brother and I were surprised to find nineteen eggs of the Ruddy Duck (*Erismatura jamaicensis*) in a nest described in my notes under date of June 15 as a newly-constructed, empty Coot nest. Held in place by a heavy growth of reeds in three feet of water, and built of reed stalks, the nest was very similar in shape, size, and construction to twenty-one Coot nests on the lake, and differed markedly from a nearby Ruddy Duck nest, in which ten eggs composed a complement. As only eighteen days, including both days of our visit, had elapsed since the nest had been empty, evidently more than one Ruddy Duck had contributed to this set of nineteen eggs in a nest presumably built by Coots.

The cup of the nest was seven inches in diameter at the rim, allowing room for a top layer of only ten of the typically large Ruddy Duck eggs. Eight eggs beneath these, where the diameter of the cavity was much less, formed, roughly, two more layers. Below these, one egg, pressed deep into the wet base of the nest, was half submerged in the warm water. Only by removing every one from the nest could the exact number of eggs be ascertained. After raising the bottom of the nest above water level by adding pieces of reeds, we replaced the eggs in the necessary three layers. But we agreed that it would be impossible for a duck to turn more than the top ten or twelve eggs without rolling some of them over the rim of the nest into the lake; and that the lowermost eggs would surely not hatch.

While at the lake on August 24, however, I saw nineteen young Ruddy Ducks, of uniform size, appearing to be about one-third grown, swimming in a group with one adult female. Because of the lowered level of the water, I was unable with a raft to reach the nest that had contained nineteen eggs, and could not be positive that it had produced the young ducks now seen swimming. But as the other four broods of young of this species observed at the lake during the season were all on the water before July 2, it seems quite certain that the deep-piled nineteen eggs laid by at least two Ruddy Ducks in a Coot nest were successfully hatched.—Winton Weydemeyer, *Fortine, Montana.*

Some 1929 Bird Notes from the Chicago Region.—The artificial lake in the Mt. Forest preserve near Willow Springs is becoming a regularly established stopping place for waterfowl. On April 27, 1929, a flock of about thirty Double-crested Cormorants were on the lake, and were seen on several previous and subsequent visits. Other birds seen were loons, gulls, mergansers, and ducks of several species. Even an Osprey was seen on one visit. Until the making of this lake, cormorants were few and far between in the Chicago region.

An amusing instance of the fearlessness toward man on the part of some birds came to the writer's observation this year. On the morning of April 28 a Flicker was seen to chisel away vigorously at a small, three-foot-high poplar stump. The stump is only about ten feet away from the steps to the rear porch of the writer's home. For the next three or four days the bird made the chips fly in a most energetic manner, until the cavity in the stump seemed to reach down almost to the level of the ground. Later the young could be heard producing their characteristic noise, like a swarm of bees, particularly when one tapped on the rim at the entrance of the cavity. On May 28 they left the nest. No time lost there!

Of late years, the writer has repeatedly seen Pine Siskins in May. This year a flock of about fifteen were seen on the 8th near his home in River Forest. This may indicate a nesting place nearer to Chicago than has hitherto seemed possible. Thus, George Miksch Sutton, state ornithologist of Pennsylvania, has found a large nesting colony in an extensive piece of swampy woods in his state, after he had for years discounted such a possibility when he saw the Siskins there.

For the first time in twenty years' residence near Chicago, on May 14, the writer saw a Clay-colored Sparrow. As this species breeds commonly in northern Wisconsin, it should be a more or less regular migrant near Chicago. The chances are that it is of more frequent occurrence than is generally believed. It is a small, secretive, inconspicuous bird, of much the same size and appearance as the Chipping Sparrow but can, by the aid of a good glass, be told from the latter species by the triangular brown spot on the cheek. Another one was seen by Mr. S. Gregory, in his yard in Winnetka. This may merely be an unusual occurrence, or it may indicate a partial shifting of migration route, as seems to be true of Harris's Sparrow.

On May 18, the writer saw a Mockingbird at Mud Lake, near Lyons, where one was seen several times in successive years. I suspect that there is a pair resident in this very suitable spot.

On November 14, a Snowy Owl was shot some distance within the city limits of Chicago.—C. W. G. Eifrig, *River Forest, Illinois.*

An Ohio Record for the European Teal.—Among the numerous duck skins in the bird collection of the late W. F. Henninger, which was recently acquired by the Ohio State Museum, is a male European Teal (*Nettion crecca*) collected by Mr. Henninger on March 18, 1910, at New Bremen, Ohio. The specimen is labeled "*Nettion carolinensis*, Green-winged Teal." This is apparently the bird referred to by Henninger in the Wilson Bulletin, Vol. XXIII, p. 61, 1911, the incorrect identification arising from the close resemblance of the European and American species. The "make" of the skin is like that of other small ducks in the same collection and is quite typical of Henninger's work. Upon comparison with European specimens of *N. crecca* this bird is seen to be unquestionably of that species, lacking the white crescent before the wing and having the long scapulars largely white, not vermiculated as in *N. carolinense.* No other instance of the occurrence of this teal in Ohio is known to the writer and a cursory search reveals but one additional record for the interior of the United States, that given by Eaton on p. 191 of the "Birds of New York," for Cayuga Lake. As has been suggested by Mr. Forbush in "The Birds of Massachusetts and Other New England States," the apparent degree of rarity of this bird in America may be due in part to its similarity to the common Green-winged Teal.—Charles F. Walker, *Ohio State Museum, Columbus, Ohio.*

Some Warbler Records at Sioux City, Iowa.—The spring migration flights of the numerous small warblers may vary a few days, from one year to the next, but as a rule the birds can be looked for on or about the same time every year. The spring of 1930 seemed to be an exception, however, and showed what a real early spring will do in changing migration dates of many of our birds. Some species arrived four or five days ahead of their regular arrival dates, and some

even ten days earlier than usual. This spring marked the early coming of some of the swallows, vireos, and several species of warblers. Another thing particularly noticed was the fact that certain other species did not come on this early wave and came instead on about their usual arrival dates. The Black and White Warbler, the two water-thrushes, and others come under this latter group.

The Blackburnian Warbler and the Chestnut-sided Warbler were not in evidence the last two years, but to offset this we can add the Blue-winged Warbler, Cape May Warbler, and Prothonotary Warbler as rare migrants. The species listed in this report are records from Sioux City and the immediate vicinity, including Union County, South Dakota, and Dakota County, Nebraska.

Black and White Warbler (*Mniotilta varia*). A common migrant during the past five seasons. On August 11, 1930, the writer saw three young Black and White Warblers which were probably reared near Sioux City.

Prothonotary Warbler (*Protonotaria citrea*). One of our rarest migrating warblers. One record on May 11, 1929, at Mud Lake, Union County, South Dakota. This singing male bird was watched by many members of the Iowa Ornithologists' Union and the Nebraska Ornithologists' Union, who were having a joint field trip on this date.

Blue-winged Warbler (*Vermivora pinus*). A very uncommon migrant. On April 30, 1930, I heard a warbler song unfamiliar to me and following it up found a Blue-winged Warbler. The bird allowed fairly close approach and was watched with 10x glasses for nearly thirty minutes.

Nashville Warbler (*Vermivora ruficapilla ruficapilla*). This little warbler is a regular migrant, but can hardly be considered a common one.

Orange-crowned Warbler (*Vermivora celata*). A very common migrant in both spring and fall. The first bird was seen on April 30, 1930, and is usually with us until about May 20. Found in the fall as late as October 16.

Tennessee Warbler (*Vermivora peregrina*). This common migrant arrived on May 5, 1930, and appeared to be even more common than during the four preceding seasons. From the date of arrival this year, until past mid-May, an observer in the field would often see and hear fifty to seventy-five of these warblers in a short walk.

Cape May Warbler (*Dendroica tigrina*). I have only found this bird on one day, May 9, 1930. On this day two Cape May Warblers were seen in Floyd Cemetery and a lone bird was noticed in the Toothaker Orchards.

Yellow Warbler (*Dendroica aestiva aestiva*). An abundant summer resident. It usually departs early, but it is often found here in the fall, viz., September 16, 1929.

Myrtle Warbler (*Dendroica coronata*). This common migrant arrives ahead of all the other warblers and lingers the latest in the fall. The earliest spring arrival is April 14, 1927, and the last fall record is October 30, 1929.

Magnolia Warbler (*Dendroica magnolia*). Not a very plentiful migrant, but is observed most years.

Chestnut-sided Warbler (*Dendroica pensylvanica*). Evidently an erratic bird of passage through this territory. The writer's only record is May 15, 1928, when several of these trim little warblers were found near Half Moon Lake, Sioux City.

Black-poll Warbler (*Dendroica striata*). The thin wiry song of the Black-poll Warbler is a common sound in our woods during the latter part of May. The ordinary date of arrival is about the middle of the month, but this year the first birds came on May 5.

Blackburnian Warbler (*Dendroica fusca*). This beautifully colored warbler is also in the class with the Chestnut-sided Warbler. Two male birds were watched with some interest on May 16, 1928.

Palm Warbler (*Dendroica palmarum*). An interesting species, which is not an especially common or regular migrant. Several singing birds were heard and seen during the second week of May, 1930. Occasionally found passing through in October.

Ovenbird (*Seiurus aurocapillus*). A common migrant, with the earliest spring arrival on May 1, 1928. In June, 1930, and again in July, the writer observed Ovenbirds in a certain wooded ravine east of Sioux City, and from their actions it was concluded that the birds were probably breeding here.

Grinnell's Water-thrush (*Seiurus noveboracensis notabilis*). Found as a very regular migrant in the spring, but is not seen as often in the fall. Once in a while the hiker will be treated to the fine clear song of this bird, singing from the underbrush near the water's edge.

Louisiana Water-thrush (*Seiurus motacilla*). This water-thrush is also a regular migrant every spring. I think that a season or two of intensive collecting is necessary, however, to determine which species is really the common migrant through this region.

Mourning Warbler (*Oporornis philadelphia*). A late-comer among the throng of warbler visitors, which is also at times found in song. On May 20, 1930, I found one lone bird of this species. Two days later the woods seemed full of Mourning Warblers, several of which were singing, and I counted no less than forty-five in a walk of two or three miles.

Maryland Yellow-throat (*Geothlypis trichas trichas*). This familiar ground-loving warbler is heard on all sides during the summer time. The yellowthroat is another of the warblers which has a habit of staying late in the fall; viz., October 10, 1930.

Yellow-breasted Chat (*Icteria virens virens*). Not found as a common summer resident. Two chats were heard by Dr. T. C. Stephens and the writer on May 13, 1928, near Homer, Dakota County, Nebraska. Mr. Walter W. Bennett found several nests of the chat near McCook Lake, Union County, South Dakota, during the summer of 1929.

Wilson's Warbler (*Wilsonia pusilla pusilla*). A regular spring migrant, also found sometimes in the fall. Wilson's Warblers were apparently more common in 1929, when upwards of twenty-five birds were seen on a field trip. While in 1930 the largest number seen was four birds, on May 13, on this last date two of the warblers were heard singing.

American Redstart (*Setophaga ruticilla*). A regular migrant and not uncommon summer resident. On August 12, 1929, and on August 11, 1930, the writer saw young birds with adults on the Iowa bank of the Big Sioux River.—William Youngworth, *Sioux City, Iowa.*

PROCEEDINGS OF WILSON ORNITHOLOGICAL CLUB

By Jesse M. Shaver, Secretary

The Seventeenth Annual Meeting of the Wilson Ornithological Club was held at Cleveland, Ohio, on December 29 and 30, 1930, in connection with the general sessions of the American Association for the Advancement of Science. The Cleveland Bird Club acted as host to the Wilson Club on this occasion and helped to make the meeting a success by their splendid hospitality. The W .O. C. had the pleasure of having many of the members of the Inland Bird Banding Association present at its meetings. The Tuesday afternoon (December 30) session was held in coöperation with the Cleveland Bird Club and the Inland Bird Banding Association. The headquarters of the Wilson Club was at the Hollenden Hotel, while the business and program sessions were held in room 32, Clark Hall, College for Women, Western Reserve University. The Annual Dinner was held on Tuesday evening, December 30, at the Hollenden Hotel.

Business Sessions

The business sessions were held on Monday and Tuesday mornings from 9:00 to 10:00 A. M. and at 5:00 P. M. on Tuesday.

The Monday morning business meeting was of the usual type. The minutes of the previous meeting were approved without being read since they had previously been published in the Wilson Bulletin (Vol. 42, No. 1, pages 68-73). The Editor reported briefly on the Wilson Bulletin of the past pear and on prospects for 1931. The Secretary's report indicated a flourishing condition of the Club with a total of 775 paid up members and 54 members delinquent for 1930 dues. These last will be dropped from the rolls unless their dues are paid shortly. All of the new members secured during the year and temporarily elected by the Electoral Board were approved. The Treasurer's report was read by the Secretary, in the absence of the Treasurer, and referred to the Auditing Committee for consideration. The temporary committees appointed at this time were: the Committee on Nominations, the Committee on Resolutions, and the Auditing Committee.

At the Tuesday morning meeting, all committees except the Committee on Nominations reported.

The Auditing Committee was composed of A. F. Ganier and Josselyn Van Tyne. The chairman, A. F. Ganier, reported that the Treasurer's records were found to be correct. They were then approved.

The Committee on Endowment was continued for another year with A. F. Ganier as chairman.

The Committee on Resolutions composed of Myron H. Swenk, Chairman, Mrs. H. J. Taylor, Charles J. Spiker, and T. C. Stephens presented an imposing array of resolutions approving such significant conservation problems as the establishment of a national park in the Everglades of Florida, the establishment of a national park in the American Samoan Islands, and the passage of the McNary-Haugen bill regulating the bag limit on game birds by Federal statute, and disapproving the bill now before Congress authorizing large appropriations to the Biological Survey for a ten year exterminative poisonous program against wild animals regarded as inimical to livestock. These measures are of such great importance to the conservation of our native birds and mammals as to arouse every

nature lover. Read the resolutions through carefully, and then write the Senators and Congressmen from your state at once.

The resolutions as passed are given below:

Whereas, The Wilson Ornithological Club, now in Seventeenth Annual Meeting assembled at Cleveland, Ohio, December 29 and 30, 1930, is a national organization of several hundred ornithologists and bird lovers who are deeply interested in the proper protection, preservation, and conservation of native wild life everywhere, and especially in the United States and its possessions, and

Whereas, There is now before the Congress of the United States legislation proposing the establishment in the Everglades of Florida of a national reservation to be known as the Tropic Everglades National Park, for the permanent preservation of the wild character of this region, and its fauna and flora which are in many ways unique; therefore be it

Resolved, That we favor the acquiring by the United States of sufficient suitable lands in the Florida Everglades to enable the establishment of a National Park, to be administered by the Federal Government in such a manner as to make certain the full preservation of the primitive character of the area and to afford permanently complete protection to its indigenous bird and other animal life, and to its plant life.

Whereas, The Government of the United States has recently formally accepted a group of the Samoan Islands which have long been governed by the United States Navy, and is now studying the problem of the future administration of these islands, and

Whereas, Any commercial exploitation of these islands would likely be ruinous to their native fauna and flora, including the native Samoan race, and such exploitation is always a possibility unless provided against. therefore be it

Resolved, That we hereby endorse the proposal to make the American Samoan Islands a National Park, to be administered by the Park Service of the United States.

Whereas, There is now before the Congress of the United States a bill (S. 3483; H. R. 9599) authorizing large appropriations to the Biological Survey of the United States Department of Agriculture for the purpose of carrying out on a large scale a ten-year exterminative poisoning program directed against native wild mammals regarded as inimical to the livestock interests, and

Whereas, Such extended and extensive poisoning campaigns involving the persistent and wide-spread distribution of poisons are very destructive to valuable wild life, especially the smaller native carnivores and fur-bearers, as has otherwise been fully presented to the members of Congress; therefore be it

Resolved, That we express our opposition to this program and respectfully urge our representatives in Congress to likewise oppose this measure.

Whereas, We believe in the principles of shorter open seasons, closed seasons, reduction of bag limits, sanctuaries and refuges for the conservation of game birds, though recognizing that no one of these is a panacea, and

Whereas, We believe that regulation of the bag limit by Federal Statute is a more effective safeguard for the birds than are annual regulations at the discretion of the Department of Agriculture; therefore be it

Resolved, That we favor the passage of the McNary-Haugen bill (S. 2015; H. R. 5278) which provides for the reduction of the bag limit by Federal statute.

The new constitution was taken from the table and read by Myron H. Swenk who pointed out some errors in the mimeographed copy sent to the members October 28 by the Secretary. The new constitution was considered at the last annual meeting at Des Moines and tabled according to the method prescribed by the old constitution. After the reading, the new constitution was unanimously adopted. The new constitution as adopted is printed beyond.

The Secretary was instructed to send the greetings of the W. O. C. to three of the honorary members of the club who were unable to be present, viz., to Miss Althea R. Sherman, Mr. Otto Widman, and Dr. L. Otley Pindar.

The report of the Library Committee was presented by T. C. Stephens, and included the agreement which had been negotiated with the Museum of Zoology of the University of Michigan. This agreement was ratified and adopted, and our officers were authorized to sign it. The vacancy in this Committee caused by the resignation of Mr. Pellett was not filled at this time. (The report of the Committee and the agreement are printed farther along in the proceedings).

On motion of T. C. Stephens, the Secretary was authorized to draw on the Treasurer for an amount not to exceed one hundred dollars for stenographic assistance in the membership campaign during the next year.

At the Tuesday afternoon business meeting, Lynds Jones reported for the Committee on Nominations. This committee was composed of Lynds Jones, Chairman, William I. Lyon, and J. Paul Visscher. The report of this committee was adopted and the following officers were unanimously elected:

President: J. W. Stack, Michigan State College, East Lansing, Michigan.

Vice-President: George M. Sutton, Bethany, West Virginia.

Secretary: Jesse M. Shaver, George Peabody College for Teachers, Nashville, Tennessee.

Treasurer: W. M. Rosene, Ogden, Iowa.

Councillors:

Lynds Jones, Oberlin College, Oberlin, Ohio.
A. F. Ganier, Nashville, Tennessee.
Mrs. Margaret M. Nice, Columbus, Ohio.
Myron H. Swenk, University of Nebraska, Lincoln, Nebraska.
Clarence Bretsch, Gary, Indiana.

Officers and Councillors were nominated and elected under the old constitution under the assumption that the new constitution would not go into effect until after this annual meeting, since this meeting began under the old constitution.

Social Features

The social features of the Cleveland meeting were unusually pleasant and enjoyable. The annual banquet was held at the Hollenden Hotel, Tuesday evening, with the Inland Bird Banding Association. Our host, the Cleveland Bird Club, had planned an unusually attractive menu and program for this occasion. This part of the meeting was probably one of the most satisfactory that the Club has ever had. C. M. Finfrock was toastmaster. President Stack spoke briefly as also did Mr. Lyon. Then the speaker of the evening, Dr. H. C. Oberholser, of the United States Biological Survey, addressed the group on "The Present Status of American Waterfowl."

For the unusual success of the banquet, the Wilson Ornithological Club is deeply indebted to Mr. Herbert W. Brandt, Mr. S. Prentiss Baldwin, and their able assistants. Ninety-eight people were counted at the dinner.

Monday evening the Club was hospitably entertained at the beautiful home of Mr. and Mrs. Herbert W. Brandt. The occasion was very delightful and much enjoyed by the large group present. Mr. Brandt's fine library and his large collection of eggs were exhibited to the guests. The size of this collection, practically all personally taken, and the excellent technique used in preparation excited general admiration.

At noon on both Monday and Tuesday, the members had the pleasure of lunching together in Haydn Hall; thus renewing friendships and making new acquaintances.

Exhibits

A recent portrait of Professor Francis Hobart Herrick, painted by William Edmondson of Cleveland, was exhibited on Monday afternoon in the "Browsing Room" of Clark Hall.

One of the most interesting features of the meeting was a display of bird paintings by Mr. Walter A. Weber, of the Field Museum of Natural History, Chicago. Seventeen of these paintings are to illustrate the report on the Crane Pacific Expedition, as follows: Cocos Island Cuckoo, Graceful Trogan (Panama), Galapagos Penguins, Solomon Island Red Lory, New Hebrides Wood Rail, Blue-winged Fruit Pigeon, Racquet-tailed Kingfisher, Kingbird of Paradise, Cassowary (a head study), Celebes Wood Kingfisher, Celebes Hornbill, New Guinea Cuscus (a mammal), Giant Skink (a lizzard from Solomon Islands), Striped Trigger Fish, Blue-spotted Puffer, Golden Butterfly Fish, Achilles Surgeon Fish. Eighteen of the plates designed to illustrate Dr. Roberts' forthcoming work on the birds of Minnesota were also shown, as follows: Snow Buntings and Longspurs, Baltimore and Orchard Orioles, Spizella group (Field, Tree, and Clay-colored Sparrows), Purple Finch, Pine Grosbeak, and Redpolls, Fox Sparrow, Towhees, and Swamp Sparrows, Juncos and English Sparrows, Crossbills and Evening Grosbeak, Red-tailed Hawk, American Bittern, Prairie Falcon, Swainson's Hawk, Ring-necked Pheasant, Albino Bluejay, European Starling, Young Duck Hawk, Snowy Owl, Short-eared Owl, Sharp-tailed Grouse. Mr. Weber's work was a surprise to many of the people present, but all conceded that he is a rising artist of the first rank.

The Cleveland Museum of Natural History opened its study collection of birds to the Wilson Ornithological Club on Wednesday, December 31.

A very profitable demonstration of the scientific apparatus used by the Baldwin Bird Research Laboratory at Gates Mills was arranged by Mr. S. Prentiss Baldwin in room 207 of the Medical School Building on Monday, Tuesday, and Wednesday. These instruments were demonstrated:

The Itograph. This is an instrument devised by Mr. Baldwin, which records each visit of a bird to the perch of the nest box to which it is attached, and even indicates whether the bird went in and touched the inner perch and when it came out. One form of the itograph was run by a clock and thus was portable. Another form was not portable because the recording mechanism was run by a motor connected with commercial current. This latter had seven different pens recording on the same paper at the same time. Each pen was connected by electric current to some nest.

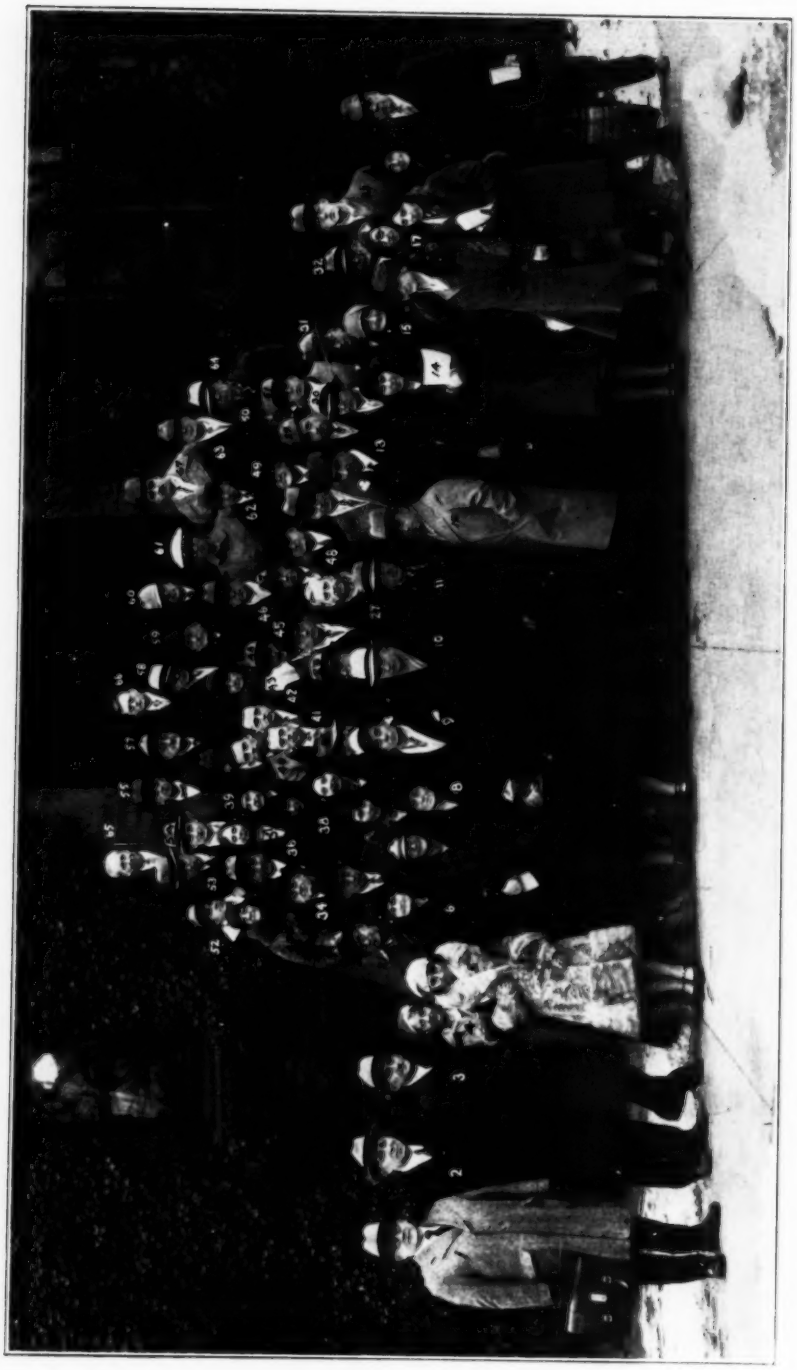

Fig. 12. W. O. C. group at Cleveland, 1930.

The Potentiometer. This hand-operated instrument has been used with a thermo-couple for measuring temperature. The instrument now in use is accurate to one-twentieth degree, Fahrenheit.

The Recording Potentiometer. This is a Leeds and Northrup instrument of the usual type here adapted for recording temperatures with thermo-couples. Wires are run out to any nearby nest. If there happens to be eggs, a thermo-couple wire is run from one side of the box through the nest just above the eggs and out the other side. The mother bird enters the box and settles down on the eggs, thus warming them up. Every time the mother stirs in such a nest, she changes the temperature of the thermo-couple and therefore the record made by the potentiometer. In this way a continuous day and night record may be secured.

Apparatus for Recording the Heart Beat of a Bird. This consists of a box containing a perch connected with a microphone of piezo-electric crystals of Rochelle salts. The heart beat of the bird is transmitted through its slender legs to the perch. A loud speaker amplifies the beat to any desired strength. This crystal perch may also be used without the box. It may be placed near the bird's nest and a record secured of the heart beat as the bird alights after flight or emerges from the nest rested.

The Micro-movie. The micro-movie built by Dr. Bradley Patten of the School of Medicine of Western Reserve University in coöperation with Mr. Baldwin was demonstrated.

Register of Attendance at the Cleveland Meeting

From California: Mrs. H. J. Taylor, Berkeley. From Connecticut: Elsie W. Townsend, Waterbury. From Delaware: Eva G. May. From District of Columbia: W. B. Bell, H. C. Bryant, G. M. Field, Frederick C. Lincoln, Harry C. Oberholser, all of Washington. From Illinois: W. V. Balduf, University of Illinois; C. J. Firkins, Springfield; T. H. Frison, Natural History Survey; Mr. and Mrs. C. P. Grant, Field Museum of Natural History; W. I. Lyon, Waukegan; Victor C. Shelford, University of Illinois; Barbara Tracy, State Museum, Springfield; Mr. and Mrs. Walter A. Weber, Field Museum of Natural History. From Indiana: R. W. Samson, Purdue University; L. A. Test, West Lafayette. From Iowa: F. L. Fitzpatrick, Coe College, Cedar Rapids; H. E. Jacques, Iowa Wesleyan College, Mt. Pleasant; Harry M. Kelly, Cornell College; W. F. Kubichek, Coe College, Cedar Rapids; Chas. J. Spiker, New Hampton; T. C. Stephens, Morningside College, Sioux City. From Kansas: George E. Johnson, Kansas State Agricultural College, Manhattan. From Massachusetts: Frank E. Morse,

---

KEY TO THE GROUP PHOTOGRAPH. (A dash following a number indicates that the person could not be named by the officers. The Secretary will be glad to receive corrections of these omissions). 1, C. M. Finfrock. 2, Herbert W. Brandt. 3, Albert F. Ganier. 4, Ethel Atkinson. 5, Vilma Rottenstein. 6,——. 7, Mrs. Lynds Jones. 8, Mrs. H. J. Taylor. 9, R. O. Gosden. 10, W. M. Raglin. 11, J. W. Stack. 12, M. D. Pirnie. 13, Jesse M. Shaver. 14, Mrs. Ben J. Blincoe. 15, Leila A. Compton. 12, Margarette E. Morse. 17, Marjorie Ruth Ross. 18, Helen F. Hill. 19, Mrs. A. F. Satterthwait. 20, S. Prentiss Baldwin. 21, Robert L. Baird. 22, James Savage. 23, Mrs. Walter A. Weber. 24, Mrs. Cleveland P. Grant. 25, W. Bryant Tyrrell. 26, E. H. Eaton. 27, A. F. Satterthwait. 28, F. L. Fitzpatrick. 29, John W. Aldrich. 30, W. F. Kubichek. 31, H. G. DaCosta. 32, William G. Vinal. 33, Josselyn Van Tyne. 34, T. C. Stephens. 35, Mrs. Etta S. Wilson. 36, George R. Mayfield. 37, Mrs. S. Charles Kendeigh. 38,——. 39, Mrs. Margaret M. Nice. 40, Paul A. Stewart. 41, E. O. Mellinger. 42, Lony Strabala. 43, Reta Swan. 44,——. 45, Ruskin S. Freer. 46, Harry W. Hann. 47, L. A. Test. 48, Myron H. Swenk. 49,——. 50, E. L. Moseley. 51, Maurice Brooks. 52, Charles J. Spiker. 53, Paul A. Moody. 54, S. Charles Kendeigh. 55, W. E. Clyde Todd. 56,——. 57, Lynds Jones. 58, Walter A. Weber. 59, L. B. Nice. 60, Cleveland P. Grant. 61, Ralph D. Bird. 62, Frederick C. Lincoln. 63, H. D. Ruhl. 64, Ben J. Blincoe. 65, Wm. I. Lyon. 66, G. M. Cook. 67, J. Paul Visscher. Photographs of this group, 11x15 inches, may be secured at $1 each from the Wiltshire Studio, 7016 Euclid Avenue, Cleveland, Ohio.

Boston; Leonard G. Worley, Cambridge. From MICHIGAN: Ephraim B. Boldyreff, Sanitarium, Battle Creek; Mary Ella Bennett, Ann Arbor; Edward M. Brigham, Jr., Museum of Natural History, Battle Creek. R. O. Gosden, Ypsilanti; Theodosia Hadley, Kalamazoo; T. L. Hankinson, Ypsilanti; Harry W. Hann, Ann Arbor; Peter Okkelburg, Ann Arbor; M. D. Pirnie, State Department of Conservation, East Lansing; W. M. Raglin, Ypsilanti; H. D. Ruhl, East Lansing; Katherine Sprague, Farmington; J. W. Stack, East Lansing; W. Bryant Tyrrell, Birmingham; Josselyn Van Tyne, Museum of Zoology, Ann Arbor; Mrs. Etta S. Wilson, Detroit. From MINNESOTA: Almeda Anderson and Leslie Bevoven, of the University of Minnesota, Minneapolis. From MISSOURI: Dorothy S. Bayer, H. G. Da Costa, Mr. and Mrs. A. F. Satterthwait, all of Webster Groves; C. D. Day, Westminster College, Fulton. From NEBRASKA: Myron H. Swenk, University of Nebraska. From NEW YORK: Carol Cady and Jean Cady, New York City; P. J. Chapman, Agricultural Experimental Station, Geneva; E. H. Eaton, Geneva; R. N. Johnson, Normal School, Oneonta; C. V. Knipper, Medina. Marjorie Ruth Ross, Ithaca; James Savage, Buffalo; Albert H. Shadle, Buffalo. From CLEVELAND, Ohio: John W. Aldrich, Mrs. Hella M. Antisdarle, S. Prentiss Baldwin, Mrs. T. P. Bateman, Mrs. H. S. Benedict, Mrs. A. R. Boethelt, Herbert W. Brandt, Chester K. Brooks, Mabel E. Chapman, Mrs. M. E. Crane, R. M. Deering, Jessie Duff, George H. Dury, C. M. Finfrock, Mr. and Mrs. Arthur B. Fuller, Mrs. N. L. Hakbell, Frances Herrick, Ruth A. Hubbard, Russel A. Joly, H. S. Jones, Mr. and Mrs. S. Charles Kendeigh, M. McNab, Mrs. A. B. Marshall, Louise Klein Miller, Margarette E. Morse, Mrs. James H. Murphy, N. A. Neal, Miss A. Parker, Mrs. Harry D. Potter, Mildred E. Reeve, F. A. Simpson, J. Stevenson, S. H. Taylor, Dorothy A. Trent, William G. Vinal, J. Paul Visscher, Grace Y. Visscher, Marideen Visscher, I. R. Watt. From OHIO outside of *Cleveland*: Ethel Atkinson, Toledo; Robert L. Baird, Oberlin. Mr. and Mrs. B. J. Blincoe, Dayton; Florence E. Clippmayes, Dayton; Leila A. Compton, Wooster; G. M. Cook, Youngstown; Mr. and Mrs. W. M. Dawley, Lakewood; Emma R. Ehibar, Bay Village; Betty Francis, Kent; R. M. Geist, Columbus; Mrs. W. W. Godard, Lakewood; W. B. Goddard, Canton; Ethel Guvans, Kent; Lawrence E. Hicks, Division of Conservation, Columbus; E. C. Hoffman, Lakewood; H. C. Jones, Oberlin; Dr. and Mrs. Lynds Jones, Oberlin; Emerson Kemsies, Lakewood; Gerald L. Koffel, Louisville; Margaret McCloud, Columbus; E. O. Mellinger, North Lima; Lyle Miller, Sharline; E. L. Moseley, Ohio State College, Bowling Green; Dr. and Mrs. L. B. Nice, Columbus; F. M. Phelps, Elyria; Vilma Rottenstein, Toledo; M. T. Royer, Beren. James Stevenson, Gates Mill; Paul A. Stewart, Leetonia; Tony B. Strabala, Leetonia; Arthur Stuyska, Columbus; Reta Swan, Dayton. From OKLAHOMA: R. D. Bird, University of Oklahoma, Norman. From PENNSYLVANIA: Norman W. McClintock, Pittsburgh; George J. Free, State College; George R. Green, State College; Helen F. Hill, Uniontown; Charles E. Mohr and John S. Mohr, both of Bucknell University, Lewisburg. W. E. Clyde Todd, Carnegie Museum, Pittsburgh. From TENNESSEE: G. M. Bentley, T. G. Hopkins, and Edwin B. Powers, all from the University of Tennessee, Knoxville; John T. McGill and George R. Mayfield from Vanderbilt University, Nashville; A. F. Ganier, Nashville; Jesse M. Shaver, George Peabody College for Teachers, Nashville. From VIRGINIA: Ruskin S. Freer, Lynchburg; Florence Hague, Sweet Briar; Lena B. Henderson, Lynchburg. From VERMONT: Paul A. Moody, Burlington. From WEST VIRGINIA: Maurice Brooks, French Creek; A. B. Brooks, Wheeling. From WISCONSIN: L. J. Cole,

University of Wisconsin, Madison; Margarette E. Morse, Viroqua; Louise Pollitz, Oshkosh.

Summary of Attendance: California, 1; Connecticut, 1; Delaware, 1; District of Columbia, 5; Illinois, 10; Indiana, 2; Iowa, 6; Kansas, 1; Massachusetts, 2; Minnesota, 2; Missouri, 5; Nebraska, 1; New York, 9; Oklahoma, 1; Pennsylvania, 7; Tennessee, 7; Virginia, 3; Vermont, 1; West Virginia, 2; Wisconsin, 3; Ohio (outside of Cleveland), 36; Cleveland, 41. Total attendance, 163. Total outside of Cleveland, 122. Number at Dinner, 98.

REPORT OF THE SECRETARY FOR 1930*

Nashville, Tennessee, December 29. 1930.

To the Officers and Members of the Wilson Ornithological Club:

During the past year, a very intensive campaign for new members has been conducted by the Secretary. In this campaign, he was ably assisted by a local membership committee composed of Vera Kearby, Compton Crook, and H. C. Monk. The membership as a whole rendered valiant service in sending in nominations. The Club is especially indebted to W. B. Taber, Jr. and to Miss Marjorie Ruth Ross for their activity in this and other respects.

This campaign was reasonably successful, a total of 241 new members being added to our rolls as follows: sustaining, 9; active, 35; associate, 197. These new members are distributed through 37 states and 7 foreign countries: Alabama, 1; Arkansas, 1; California, 14; Colorado, 3; Connecticut, 2; Delaware, 1; Florida, 2; Georgia, 4; Illinois, 15; Indiana, 6; Iowa, 27; Kansas, 6; Kentucky, 3; Liuisiana, 1; Maine, 1; Massachusetts, 8; Michigan, 14; Minnesota, 3; Mississippi, 2; Montana, 1; Missouri, 9; Nebraska, 9; New Jersey, 3; New York, 22; North Carolina, 7; North Dakota, 4; Ohio, 14; Oklahoma, 1; Oregon, 2; Pennsylvania, 13; South Carolina, 1; South Dakota, 3; Tennessee, 15; Texas, 4; Virginia, 6; Wisconsin, 3; Wyoming, 1; Canada, 6; Australia, 2; Denmark, 1; Germany, 1; Holland, 1; Ireland, 1; Mexico, 1. The results of the campaign for new members showed itself in increasing the number of subscribers as well as members as was shown in the Editor's report.

In spite of the large number of new members obtained this year, the Wilson Ornithological Club has only a few more total members this year than last due to an unusually large number of resignations and delinquencies and the further fact that some members were listed on the Secretary's roll that had paid no dues since 1927. These last have all been discovered this year through a careful system of checking by the Treasurer, Editor, and Secretary so that the present roll includes only actually paid members. The total number of members lost by the causes mentioned above during the year of 1930 were: sustaining, 2; active, 26; associate, 60; total, 88. In addition, 9 members were lost by death as follows: honorary, 1; sustaining, 1; active, 5; associate, 2. Thus there has been a total loss of 97 members.

This leaves the present membership of the Club at 775, distributed as follows: honorary, 7; life, 5; sustaining, 58; active, 227. associate, 479.

Respectfully yours,

Jesse M. Shaver, *Secretary*.

*Corrected to the end of December, 1930.

REPORT OF THE TREASURER FOR 1930

December 30, 1929 to December 19, 1930

Ogden, Iowa, December 19, 1930.

Receipts for 1930

Cash from former Treasurer, J. W. Stack			$ 530.30
1 Associate member for 1929	$ 1.50		
424 Associate members for 1930	636.00		
52 Associate members for 1931	78.00		
3 Active members for 1929	7.50		
224 Active members for 1930	560.00		
11 Active members for 1931	27.50		
1 Active member for 1932	2.50		
59 Sustaining members for 1930	295.00		
1 Sustaining member for 1931	5.00		
			$1,613.00
90 Subscribers for 1930	$ 135.00		
20 Subscribers for 1931	30.00		
2 Subscribers for 1932	3.00		
1 Subscriber for 1933	1.50		
2 Active subscribers for 1930	5.00		
Total short-time subscriptions	7.85		
Total foreign subscriptions	8.25		
			190.60
From advertising	$ 10.00		
Contributions to color plate fund	7.00		
For publication fund from Miss Sherman	35.00		
For publication fund from Mr. Fargo	30.00		
Various small gifts	1.55		
Sale of Bulletins	34.35		
			117.90
Total			$2,451.80

Disbursements for 1930

Printing four issues, Wilson Bulletin	$1,150.40	
Share of cost of color plate, June Bulletin	93.00	
Halftones and zincs	128.77	
Addressing envelopes for Bulletin	16.13	
Mailing expense for 1929	41.12	
Mailing envelopes, and miscellaneous	30.35	
Cost of publication		$1,459.77
Expense in Secretary's office		237.14
Expense in Treasurer's office		38.50
Expense in President's office		5.13
Printing, telegrams, express, etc.		27.21
Refunds		8.90
Total expense		$1,776.65
Balance on hand December 19, 1930		675.15
Total		$2,451.80

Endowment Fund

From former Treasurer, January 4, 1930	$732.32
Life membership of Wm. I. Lyon	100.00
To complete life membership of Dr. A. C. Taylor	25.00
Interest at 4 per cent	31.03
Total on December 19, 1930	$888.35

Respectfully submitted,

W. M. Rosene, *Treasurer.*

REPORT OF THE LIBRARY COMMITTEE

The project of a library for the Wilson Ornithological Club was first suggested by Mr. Frank C. Pellett. The proposal was made for Mr. Pellett at the Ann Arbor Meeting in 1928, and at that time the undersigned Committee was appointed to pursue the matter. After two years of study and negotiations the Committee presents the following definite program of action for consideration at the Cleveland Meeting, 1930. (The Agreement, which was signed by the University of Michigan authorities prior to our Cleveland Meeting, and by the officers of the Wilson Ornithological Club after authorization at the Cleveland Meeting, is printed below as a part of this report.)

As the library grows by accretion it will increase in usefulness and importance. It will serve the members of the organization who do not have access to an adequate local library, and it will undoubtedly eventually be of service in the research work of the University. The original plan includes the establishment of one or two additional libraries of a similar, though possibly less technical, nature; one to be located somewhere in the south, and another, perhaps, west of the Mississippi River. Preliminary steps have been taken looking toward these additional libraries, but it was the Committee's policy to secure a culmination of the first one before taking active steps toward others.

The Ann Arbor library may now be looked upon as permanently established and ready for contributions. No purchases are contemplated. The library is to be built up by gifts and bequests of the members—either of books or of cash.

When one has spent many years of thoughtful effort in the selection and collection of a library in a special field, the time must come when the question of the disposition of such a collection takes hold of the mind. One is usually loath to think of the books being scattered. If they could only be held permanently intact, the efforts of the original owner would be thus, in a measure, perpetuated.

The Wilson Ornithological Club now solicits bequests of entire libraries of ornithological works; gifts of single, bound volumes; unbound volumes, reprints and separates in any way related to ornithology, ecology, exploration, or travel. Maps, both old and new, are likewise desired. Journals of explorers, such as Jonathan Carver, Lewis and Clark, Audubon, Henry, and all others, are of enormous value in a research library such as we are attempting to build. Biographies and bibliographies, both printed and manuscript, are wanted. The older volumes of various state geological and natural history surveys are wanted. All of the publications of the various state scientific societies and academies are wanted. We also solicit manuscript note-books, migration lists, and bibliographies of local, state, and continental scope. It is also part of the plan to establish a collection of photographs, including personal portraits (autographed, if possible), of ecological environments, birds, nests, eggs, habitats, etc. Negatives may also be desirable.

Every member of the Club may help make a nice beginning by contributing a full set of reprints of his publications to date. All such contributions may be addressed to the Library of the Wilson Ornithological Club, Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

Respectfully,

T. C. Stephens,
Frank C. Pellett,
Myron H. Swenk.

Agreement Between the Wilson Ornithological Club and the Museum of Zoology of the University of Michigan in the Matter of Establishing an Ornithological Library

This Agreement, made this 30th day of December, A. D. 1930, between the Wilson Ornithological Club, an Illinois Corporation, party of the first part, and the Museum of Zoology of the University of Michigan, party of the second part.

Witnesseth, as follows:

Whereas, the said parties are mutually desirous of creating a library, which shall be known and referred to as the "Research Library" of the Wilson Ornithological Club at Ann Arbor, Michigan, and;

Whereas, the parties hereto have agreed upon the method of creating, maintaining, and continuing such library;

Now Therefore, in consideration of the premises and of the mutual undertakings of the parties hereto, it is expressly understood and agreed:

1. At the present time this library shall be known and referred to as the "Research Library" of the Wilson Ornithological Club at Ann Arbor. But it shall be understood and agreed that the Wilson Ornithological Club may at any subsequent time alter and change the name, the present designation being considered as temporary.

2. In order to provide proper administration it is agreed that ownership of the Library shall be vested in the University of Michigan.

3. It is agreed that said Library shall remain as a distinct entity among the book collections and libraries of the University of Michigan, and shall be kept as such and housed in the Museum of Zoology unless otherwise agreed to by the high officers of the two institutions.

4. It is agreed that when a permanent name has been selected, an appropriate book plate will be furnished by the Wilson Ornithological Club; and in the meantime, a temporary book plate for identifying each item shall be devised and furnished by the same organization.

5. It is agreed that the said Library shall be available to the Staff of the Museum of Zoology and to the members of the Wilson Ornithological Club under certain proper rules and restrictions common to libraries and suited to the peculiar requirements of this case. It is further agreed that certain rare, costly, or bulky works may be withheld from circulation at the option of the Librarian in charge.

6. It is agreed that when items are loaned to non-resident members the Museum of Zoology will pay the transportation costs one way, the return charges to be borne by the borrower.

7. Since duplicate books are bound to accumulate over a period of years, it is agreed that the Museum Librarian will notify periodically, at least as often as once a year, the designated officials or representatives of the Wilson Ornithological Club, such as the Library Committee, of such duplicate material as may have accumulated, and the latter will be charged with the proper distribution or disposal of the same.

8. It is agreed that authors' separates and reprints shall be carefully filed as they are received, and as soon as practicable a system of cataloging will be devised and operated.

9. It is agreed that all books and items properly belonging in this Library shall be accessioned and catalogued promptly upon their receipt. and that as soon as practicable a catalogue (or list) of the items in the library shall be prepared by the Museum and published by the Wilson Ornithological Club for the information of its members.

10. It is agreed that the Wilson Ornithological Club will maintain a standing Committee on Library, or will from time to time appoint a special Committee on Library, whose duty shall be to coöperate and advise in the administration of the Library in such ways as may be permissible and needful.

11. It is agreed that the Museum will receive and store said stock of old BULLETINS, cost of packing and transportation to Ann Arbor to be borne by the Wilson Ornithological Club. And further, that the Librarian of the Museum shall mail out copies from this reserve stock upon order from the authorized officer of the Wilson Ornithological Club, envelopes and postage to be furnished by the Wilson Ornithological Club.

12. This Agreement is subject to the approval of the Regents of the University of Michigan.

In Witness Whereof, the said parties have hereunto set their hands and seals the day and year first above written.

In the Presence of:	WILSON ORNITHOLOGICAL CLUB,
DOROTHY M. ANDERSON.	By J. W. Stack, *President*. (L.S.)
T. C. STEPHENS.	By Jesse M. Shaver, *Secretary*. (L.S.)
	MUSEUM OF ZOOLOGY OF THE UNIVERSITY OF MICHIGAN,
RUTH A. ROUSE.	By Alexander G. Ruthven, *Director*. (L.S.)
EDITH J. SMITH.	By Frederick M. Gaige, Director, Museum of Zoology. (L.S.)

CONSTITUTION AND BY-LAWS OF THE WILSON ORNITHOLOGICAL CLUB AS ADOPTED DECEMBER 29, 1930

CONSTITUTION

ARTICLE I

Name and Object

Section 1. This organization shall be known as the Wilson Ornithological Club.

Section 2. The object of this Club shall be to promote the study and advance the science of ornithology, and particularly of field ornithology, especially as related to the birds of the interior of North America, and to secure coöperation in measures tending to that end by uniting into a group such persons as are interested therein, by facilitating personal intercourse among them and by providing for the publication of information secured.

ARTICLE II

Membership

Section 1. The membership of this Club shall consist of six classes: associate members, active members, sustaining members, life members, patrons, and honorary members.

Section 2. Any person of good moral character in sympathy with the object of this Club may be nominated for membership. Nominations for membership must be made through the Secretary. Applications for membership must be endorsed by at least one member. Members are elected at the annual meeting by a majority of the voting members present. Nominations presented in the interim between annual meetings are elected by the Electoral Board subject to ratification at the next annual meeting.

Section 3. The annual dues of associate members shall be one dollar and fifty cents ($1.50). The annual dues of active members shall be two dollars and fifty cents ($2.50). Any member may become a sustaining member by making an annual payment of five dollars ($5.00). Any member may become a life member exempt from further dues by making a payment into the Endowment Fund of the Club of one hundred dollars ($100.00). Any person may become a patron exempt from further dues by making a payment into the Endowment Fund of the Club of one thousand dollars ($1,000.00) or more. Honorary membership may be conferred by the Club by a three-fourths vote at any annual meeting upon the unanimous recommendation of the Executive Council.

Section 4. All except associate members shall be entitled to hold office and to vote.

Section 5. All annual dues for the ensuing year shall be due on January 1. Any member in arrears for dues for one year shall be dropped from the roll of members, provided that two notices of delinquency, with an interval of two months between them, shall have been sent to such member.

ARTICLE III

Officers

Section 1. The officers of this Club shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and an Editor. The duties of these officers shall be those usually pertaining to their respective offices.

Section 2. Officers shall be elected by ballot at the annual meeting by the voting members.

Section 3. Officers shall hold office for one year, or until their successors are elected, and shall be eligible for re-election. Their terms of office shall begin at the close of the meeting at which they are elected.

Section 4. The officers of the Club and three additional members, who shall be elected from its voting members by the Club, shall constitute an Executive Council. The business of the Club not otherwise provided for shall be in the hands of the Executive Council, which shall pass on any urgent matters that cannot be deferred until the next annual meeting. Five members of the Council shall constitute a quorum.

Section 5. The Electoral Board shall consist of the President, Secretary, Treasurer, and Editor.

Section 6. Vacancies in the staff of officers, occurring by death, resignation, or otherwise, may be filled by appointment of the Executive Council, but the person so appointed shall hold office only until the close of the next annual meeting of the club.

ARTICLE IV

Meetings

Section 1. An annual meeting shall be held at a time and place to be determined by the Executive Council. When the American Association for the Advancement of Science holds its annual meeting in the Mississippi Valley the annual meeting of the Club should preferably be held in conjunction with that meeting. Special meetings may be called by order of the Executive Council on a thirty-day previous notice, mailed to each member.

Section 2. Ten voting members shall constitute a quorum for the transaction of business.

ARTICLE V

Accounts

Section 1. A committee of two shall be appointed by the presiding officer at the beginning of each annual meeting, whose duty it shall be to audit the accounts of the Treasurer for the closing fiscal year .

ARTICLE VI

Amendments

Section 1. This constitution may be amended at any annual meeting by a two-thirds vote of the voting members present, provided the amendment has been proposed at the preceding annual meeting or has been recommended by a two-thirds vote of the Executive Council, and a copy has been sent to every voting member of the Club at least one month prior to the date of action.

ARTICLE VII

By-Laws

Section 1. By-laws may be adopted or repealed at any annual meeting by a majority vote of the voting members present.

BY-LAWS

1. Notice of all meetings of the Club shall be sent to all of the members at least one month in advance of the date of the meeting.

2. The time and place of the business meeting shall be published prior to the opening session of the annual meeting.

3. A program committee, of which the Secretary shall be chairman, and a local committee on arrangements for the annual meeting, shall be appointed by the President at least ninety days in advance of the date of the meeting.

4. Election of officers, except the Editor, shall be by ballot, but, by the unanimous consent of the members, the Secretary may cast one ballot, representing the unanimous vote of the members present. A nominating committee shall be appointed by the presiding officer at the first session of the new business meeting, which shall bring forward nominations of officers to serve the Club during the ensuing year. Nominations may, also, be made by any member in good standing from the floor.

5. A committee of three on resolutions shall be appointed by the President at the beginning of the annual meeting.

6. The accumulation and proper care of an Endowment Fund shall be provided for. An Endowment Fund Committee shall consist of three members appointed by the President, one member for one year, one for two years, and one for three years and at the expiration of each respective term aforesaid, a member shall be appointed for three years or until his successor shall be appointed; any vacancy in the Committee shall be filled likewise for the unexpired term of the member who has vacated. The President shall annually inform the Illinois Merchants Trust Company, as Trustee of the Endowment Fund, as to the personnel of the Committee.

7. The accumulation and proper care of one or more Wilson Ornithological Club Libraries shall be provided for. A Library Committee of three shall be elected in a manner similar to that in which the Endowment Committee is appointed, vacancies to have the unexpired term of the member filled by appointment by the President.

8. The Executive Council shall constitute a committee which shall have power to expel any person found unworthy of membership.

9. The Editor for the official organ shall be appointed by the Executive Council.

10. The official organ of the Club shall be the WILSON BULLETIN.

11. Any member three months in arrears for dues shall be ineligible to vote or to hold an elective office in the Club, and the WILSON BULLETIN shall not be sent such members until dues in arrears shall be paid.

12. The fiscal year of this Club shall be the calendar year.

13. The order of business at regular meetings shall be as follows:

1. Calling the meeting to order by the President.
2. Reading of the minutes of the previous meeting.
3. Reports of officers.
4. Appointment of temporary committees.
5. Election of members.
6. Business.
7. Reports of committees.
8. Election of officers.
9. Adjournment.

The program may be interpolated in the order of business according to convenience.

14. The rules contained in Robert's Rules of Order shall govern the Club in all cases to which they are applicable and in which they are not inconsistent with the Constitution and By-laws of this Club.

The Program

The program is given below just as it was carried out, which varies slightly from the order in which it was announced in the program printed for the meeting.

Monday Morning, December 29, 1930

Dr. Francis H. Herrick, of Western Reserve University, gave the address of welcome on behalf of the Cleveland Bird Club. In a few well-chosen words Dr. Herrick made everyone feel at home. He called our attention to the work of Mr. Baldwin's laboratory near Gates Mill, to the early work of the teacher, horticulturist, and naturalist, Gerald Potter Kirkland at Cleveland, and his influence in helping to found the Cleveland Academy of Science which later became the Cleveland Society of Natural History, and to Mr. Brandt's oölogical collection. On behalf of the Wilson Ornithological Club, President Stack responded briefly.

1. What was the Original Distribution of the Lesser Prairie Chicken? (10 min.) Myron H. Swenk, University of Nebraska, Lincoln, Nebraska.

   The statements on the limits of distribution of the Lesser Prairie Chicken in the literature are very general and indefinite. Even the A. O. U. Check-Lists (both the second and the last) give an unsatisfactory distribution statement. There is also a paucity of specimens in museums. Many of these museum specimens were obtained in the markets of New York City and bear unsatisfactory locality data. From all data available, the author concludes that the original distribution was from west-central Nebraska to northwestern Texas, west to southeastern Colorado and the eastern edge of New Mexico, east (at least in winter) to eastern parts of Nebraska, Kansas, and Oklahoma, extreme southwestern Missouri and north-central Texas.

2. Survival and Reproduction in a Song Sparrow Population During One Season. (30 min.) (Lantern slides). Mrs. Margaret M. Nice, Columbus, Ohio.

   The Song Sparrows were trapped on their own territories and banded with aluminum and celluloid bands. One-fourth of the adults of thirty pairs disappeared before July, while seven new individuals came into the area. Twelve pairs made three attempts at nesting, four pairs made four attempts. Fifteen pairs raised sixty-four young, the totals of each ranging from zero to ten. Sixty-one nests were found. in twenty-nine of which young were raised. Twenty Cowbird eggs were laid in fifteen of the nests; in five cases a single Cowbird was raised with from two to five Song Sparrows in the same nest.

3. Radnor Lake: 1915-1930. The Influence of an Artificial Lake on the Water Birds near Nashville. (20 min.) George R. Mayfield, Vanderbilt University, Nashville, Tennessee.

   The completion of Radnor Lake in 1914 opened up a new sanctuary for migrating water fowl in this region of no lakes. In ever increasing numbers and species, migrants have learned to take advantage of this body of water. The results of the work of four observers were presented.

4. More Data on Feathered Victims of the Automobile. (15 min.) Chas. J. Spiker, New Hampton, Iowa.

   This report summarizes the observations of five years made mostly in New York and Iowa but partly in nine other states. Twelve thousand miles were covered on a bicycle with further mileage by car, which was not metered. The number and kinds of birds killed were related to the types of roads. A total of sixty species had been killed and nine hundred and one individuals. English Sparrows and Red-headed Wodpeckers were most frequently killed.

5. Additions to the Birds of Ohio. (20 min.) Emerson Kemsies, Oberlin, Ohio.

   Mr. Kemsies has been assisting Dr. Jones in revising his catalog of Ohio birds. This paper is a result of this work and includes only species that

have undergone a change since the publication of Jones' catalog. There were twenty-one new species, mainly of accidental or casual species, added to the state list since 1903.

6. Winter Food of Oklahoma Quail. (10 min.) (Lantern slides). Lois Gould Bird and Ralph D. Bird, University of Oklahoma, Norman, Oklahoma. Presented by Ralph D. Bird.

   This study was based on the examination of the crops of one hundred and thirty-four Bob-whites and four Scaled Quail. The data showed that during the winter season, quail in Oklahoma feed mainly on weed seed and waste grain, the grain being either wheat or corn, depending on the section of the state from which the birds were collected. A method of using gelatin capsules to keep the crop contents separate was described.

Monday Afternoon, December 29, 1930

7. Some Facts Revealed from Thirty-four Years' Migration Records. (20 min.) Lynds Jones, Oberlin College, Oberlin, Ohio.

   Migration records for the thirty-five years, 1896 to 1930, inclusive, at Oberlin, Ohio, give an average range of dates of first arrival for 162 species of 30 days. The graph as well as the curve of arrival dates shows that an "average" or "medium" date of arrival for any species is misleading because neither graph nor curve give any focus, but the thirty-five records of the arrival of each species are well scattered over the thirty-five years. Nor are there groups of species that always migrate together year after year. The frequency of such groups is less than 10 per cent.

8. The Physiology of Bird Temperatures. (20 min.) (Lantern slides). S. Charles Kendeigh, Baldwin Bird Research Laboratory and Western Reserve University, Cleveland, Ohio.

   This paper presents a review of work done on bird temperatures through the use of thermo-couples and potentiometers. The data show that the body temperatures of adult birds are very variable, ranging normally between 104 degrees and 112 degrees F. This variability is dependent upon muscular activity, air temperature, food, and excitement. There is a marked daily rhythm in body temperature with the highest temperatures in early morning and the lowest during the first half of the night. Nestling House Wrens are cold-blooded until the development of temperature control after nine days. The nest temperature of a wren egg during incubation regularly fluctuates as much as 10 degrees, depending on whether the adult is on the nest.

9. A Progress Report on Banding Chimney Swifts. (15 min.) (Lantern slides). Wyman R. Green, The University of Chattanooga, Chattanooga, Tennessee. Read by Jesse M. Shaver.

   This report indicates the progress made in banding swifts during the past season at Chattanooga where Dr. Green and his friends band them by the thousand.

10. Ornithological Exploration in French Indo-China. (30 min.) (Lantern slides). Josselyn Van Tyne, Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

    This is an account of the ornithological work of the Kelley-Roosevelt Expedition to northwestern Indo-China in 1929 for the Field Museum of Chicago. Dr. Van Tyne takes us with him on pony-back, on rafts, and native boats through the interior of French Indo-China. We are fascinated by the interesting method used by the natives to catch pheasants and by many of their other habits.

11. Shore Birds Attracted to a Small Stream Carrying Sewage. (10 min.) E. L. Moseley, Ohio State College, Bowling Green, Ohio.

A ditch carrying all the sewage from Bowling Green, Ohio, enters a small tributary of the Portage River three miles east of the city. About eighty rods below this point the stream is shallow in mid-summer, with partly emerged stones, mud flats, and bars. Here have been seen many Yellow-legs, Pectoral and other sandpipers, whose species were mentioned, also many Killdeers and smaller numbers of other water birds.

12. Birds of Hudson Bay, 1930. (15 min.) W. E. Clyde Todd, Carnegie Museum, Pittsburgh, Pennsylvania.

Mr. Todd gave a brief account of his last trip up the eastern shore of Hudson Bay, and told of some of the birds observed.

13. Bilateral Ovaries in Raptorial Birds. (15 min.) (Lantern slides). F. L. Fitzpatrick, Coe College, Cedar Rapids, Iowa.

Several instances of the occurrence of bilateral ovaries in raptorial birds were described. There was also brief comment on the variation of kidney structure in different species. A more detailed account was published in the Anat. Rec., Vol. 46, No. 4, Sept., 1930.

14. The Waterfowl Census on the Detroit River. (30 min.) (Lantern slides). Mrs. Etta S. Wilson, Detroit, Michigan.

Systematic observation of waterfowl on the Detroit River has brought much information. It has been possible to identify the following species and form some idea as to their relative abundance: Redhead, Lesser Scaup, Golden-eye, Black Duck, Barrow's Golden-eye, American Merganser, Red-breasted Merganser, Hooded Merganser, Mallard, Shoveller, Gadwall, Canvas-back, Widgeon, Baldpate, Blue-winged Teal, Pintail, Wood Duck, Greater Scaup, Buffle-head, Old Squaw, Black Scoter, Ruddy, Lesser Snow Goose, Blue Goose, Canada Goose, Eider, Whistling Swan, and American Coot. The Lesser Scaup was found to be the most abundant, closely followed by the Canvas-back and Black Duck tied for second place.

15. Further Work on Hummingbirds in Relation to Flowers. (10 min.) L. H. Pammel, Iowa State College, Ames, Iowa. Read by T. C. Stephens.

A compilation of data supplied by correspondents as to the relation between the arrival of Hummingbirds in the spring and the blooming of flowers.

Tuesday Morning, December 30, 1930

16. Some Fluctuations in Central West Virginia Bird Life. (10 min.) Maurice Brooks, French Creek, West Virginia.

First appearance, increase to abundance, and gradual disappearance of Lark Sparrow and Bachman's Sparrow in this region are discussed without reaching any conclusion as to the causes underlying these phenomena.

17. Pioneers in Economic Ornithology. (25 min.) Mrs. H. J. Taylor, Berkeley, California.

The names of Glover, Aughey, Beal, King, and Forbes stand out as pioneers in the serious study of economic ornithology. Glover came to America from England in 1836. The United States Department of Agriculture with a sub-department of Entomology was established in 1862. Townend Glover was the first United States entomologist—being appointed to this office in 1863.

Samuel Aughey, Professor of Natural Sciences in the University of Nebraska in 1871, made an extensive and valuable study of the grasshopper plagues in this region during the period of thirteen years.

The respective fields of King, Beal, and Forbes were Wisconsin, Iowa, and Illinois. These men put the economic study of birds on a scientific basis.

18. The Red Phase of the Bobwhite, A Sex-Linked Character. (15 min.) (Lantern slides). L. J. Cole and Mack O. North, University of Wisconsin, Madison, Wisconsin.

The red color phase Bob-whites used in this experiment were furnished by Mr. Hobart Ames. The red which occurs in the normal plumage suffuses the whole body largely obliterating the black markings. On the head there appears to be a tendency for the white to be replaced by black and the black areas by red. The difference in color is apparent in the newly hatched chick, the down color of the red birds being more decidedly reddish than that of the normals.

Preliminary breeding tests made in 1930 indicated that the red phase is a dominant sex-linked allelomorph of the normal. The critical test was the mating of a normal male to a red female, which gave typical criss-cross results, though the numbers are not large. This mating gave 4 red males and 7 normal female chicks. In addition there were 1 red and 2 normal chicks on which sex could not be determined.

19. Nesting of the Bald Eagle in Tennessee. (20 min.) (Lantern slides). A. F. Ganier, Nashville, Tennessee.

Mr. Ganier gave here a brief review of all of the known remaining nesting sites of the Bald Eagle in Tennessee. These included the three eyries in the Reelfoot Lake Region and four discovered last spring near Memphis.

20. The Food Habits of the Ring-necked Pheasants in Nebraska. (10 min.) Myron H. Swenk, University of Nebraska, Lincoln, Nebraska.

Complaints from farmers of damage to crops in central Nebraska led to an investigation of the food of the Ring-necked Pheasant, based on the crop and gizzard contents of 100 birds. This investigation showed that nine-tenths of the year's food of this bird was vegetable matter and most of this corn. The corn was, however, mostly gleaned during the winter. The relatively small amount of insects eaten included some very injurious pests. The conclusion is drawn that where numerous, as in central Nebraska, this pheasant may be injurious, but that, where the numbers are kept down, it will on most farms probably render a sufficient service by destroying injurious insects as on the whole to about balance the harm done to crops.

21. Secondary Sexual Characters in the House Wren. (20 min.) (Lantern slides). Leonard G. Worley, Zoological Laboratory, Harvard University, Cambridge, Massachusetts.

A review of variations existing between the sexes in House Wrens as exemplified by measurements of various external parts, such as length of body, length of tail, length of wing, length of primaries, wing spread, etc.

22. Summer Birds in the Big Horn Mountain Region of Wyoming. (20 min.) John W. Aldrich, The Cleveland Museum of Natural History, Cleveland, Ohio.

A discussion of the author's experiences with the bird life of this most interesting section of Wyoming, touching briefly on habits and distribution.

23. The Nesting of Herons and Other Birds near Ypsilanti, Michigan. (20 min.) (Lantern slides). T. L. Hankinson, Michigan State Normal College, Ypsilanti, Michigan.

An account of nesting colonies of Great Blue and Black Crowned Night Herons in southern Michigan was given with especial attention to a colony of night herons nesting in dead trees of a flooded woodland located in an artificial lake in the course of the Huron River near Ypsilanti, Michigan.

Tuesday Afternoon, December 30, 1930

24. The Young of the Ross Goose (Chen rossi). (30 min.) (16 mm. film). Chester K. Brooks, Cleveland, Ohio.

A captive adult Ross Snow Goose laid three eggs, only one of which proved fertile. From the fertile egg was hatched, by a Bantam hen, a young goose which was successfully reared—probably the first time that the young of this goose has ever been reared in America. The nesting region of the Ross Snow Goose has not yet been discovered by white man.

25. Game Birds About Chicago. (20 min.) (Standard motion pictures). Cleveland P. Grant, The Field Museum of Natural History, Chicago, Illinois.

These motion pictures contain views of male Prairie Chickens dancing during the spring courtship, and an excellent account of the incubation and hatching of the Upland Plover.

26. Some South Dakota Water Birds with Special Studies of the Western Grebe. (25 min.) (16 mm. film). W. F. Kubichek, Coe College, Cedar Rapids, Iowa.

An account was given of one of the few areas still remaining in the Dakotas where water birds are breeding in great variety. Varying water level in a chain of lakes has had considerable effect upon the nesting of numerous species.

27. Nesting Habits of the Bald Eagle. (60 min.) (Standard motion pictures). Francis H. Herrick, Western Reserve University, Cleveland, Ohio.

These splendid pictures of the changing habits of the young eagles with age are always interesting. At each season advances, Dr. Herrick adds some new facts discovered by careful and prolonged observation from the steel tower. Thus these motion pictures are always new since they are constantly being revised to include the new data.

28. Rambles in the Black Hills. (20 min.) (Lantern slides). T. C. Stephens, Morningside College, Sioux City, Iowa.

Mainly views of the magnificent scenery in this region of the Dakotas.

Papers Read by Title

29. Recent Interesting Birds Found in the Sioux City Region. Mrs. Mary L. Bailey, Sioux City, Iowa.

30. Notes on the Birds of Northwestern Wisconsin and Western Minnesota. (15 min.) (Lantern slides). C. W. G. Eifrig, Concordia Teachers College, Oak Park, Illinois.

31. Studies from a Bird Laboratory. (15 min.) (Lantern slides). S. Prentiss Baldwin, Western Reserve University, Cleveland, Ohio.

32. Wild Wings. (20 min.) (Standard motion pictures). Two reels loaned by Mr. Edward A. Hyer of the Department of Conservation of Michigan.

33 The Early Bird. The First Two Days of Embryo. (30 min.) (Motion pictures). S. Prentiss Baldwin, Western Reserve University, Cleveland, Ohio.

ITEMS FROM THE CLEVELAND MEETING

BY ROBT. L. BAIRD

Some of us went to the banquet Tuesday evening half wishing we were triplets, at least, so that we might attend two or three other good meetings at the same time. Perhaps we dreamed that we would leave early and go to one of them anyway. But not on your life, once there we stayed there all evening. The Cleveland Bird Club and the local committee did themselves brown in entertainment that night. Not only was there a banquet, in every course of which we were reminded that we were bird lovers, for birds were pictured, carved, and modeled, to say nothing of the splendid ones broiled; but the entertainment afterward capped the climax of the whole meeting. C. M. Finfrock of the Cleveland Bird Club, was the magician toastmaster who presided. Dr. H. C. Oberholser of the Biological Survey, Washington, gave a brief address. The audience was then requested to about face toward the stage from the depths of which the toastmaster summoned forth the Herr Doctor Ein Z. Dreistein who explained and demonstrated his new baliscope. After straining the machine to the utmost it finally brought forth Wilson, the central figure on the first epoch away back in 1800-1825 among the hills of Pennsylvania. He was collecting birds in characteristic fashion with apparently the selfsame rifle which produced a terrific kick when it snapped. Very modern field glasses though brought the birds close to hand. In the second epoch Audubon was painting pictures from life down in the Tennessee woods, with the help of an enormous jug. No, the jug did not contain his paint but other incentives for cool morning work. Altogether he produced a wonderful turkey (we heard its realistic gobble) and an admirable lyrebird (I am not sure how the first part of that was spelled).

Baird was shown standardizing subspecific characters from 1850-1875 and then Coues was skinning birds in airy fashion at the Smithsonian. Delicate instruments like corn cutters and hand saws made the feathers of a midnight snipe fluff about like the light of day. The moving spirit of the fifth epoch was Herrick after a very movable white eagle which he tried to photograph with a moving camera which moved the crowd to a showdown.

We've just started the last epoch and Baldwin is its central figure. Listening to the intimacies of the heart life of the House Wrens, he has determined that the great question to be solved for them is the problem of birth control. As 1950 dawns he shouts, "Eureka" and slashes the pestiferous egg in two.

The good Herr Doctor* interpreted the whole show in a most delightful German-American-English brogue with the most brilliant scientific hits which kept the audience convulsed. We'll say he was a master showman and his machine—well, the audience demanded to see the wonderful baliscope, and carefully it was opened up, disclosing a food grinder and a string of baloney.

---

*Since the meeting there has been some dispute as to the identity of Herr Doctor Einstein, but the consensus of opinion favors Mr. Brandt. The visitors were under deep obligation to Mr. Brandt and his assistants for so pleasant and novel an entertainment.—EDITOR.

The characters in the pantomimes were:

Wilson.....Dr. Vinal, of Western Reserve University
Audubon.....Frary, of the Cleveland Art School
Baird.....Phelps, of Elyria
Coues.....Fuller, of the Cleveland Natural History Museum
Herrick.....Shipman, of Willoughby, photographer for Prof, Herrick in his Eagle work
Baldwin.....Williams, of the Cleveland Natural History Museum
Kendeigh, Baldwin's associate.....Brandt, Jr.

A Symposium Suggested as a Part of Each Annual Meeting.—There was such a fine get-together spirit among the members of the Wilson Ornithological Club at the Cleveland meeting and a number of ways were suggested by which we might further coöperate to make our work more valuable. Coöperation is necessary these days in every big project. It was illustrated in many ways in various sections of the science meetings. The A. A. A. S. prize of $1,000 was awarded this year for the work of three men together. Some of the groups have the whole annual program a symposium of the work of many during the whole year. One suggestion deserves some consideration from members of this Club. We had three sessions this meeting with papers presented in serial order and one session devoted to movies almost entirely. Why not have one session devoted to a symposium on which the members of the Club have worked in common during the year?

It has been suggested that at each meeting the President appoint a committee to choose a subject for special field study during the coming year. Some subject should be chosen not requiring too technical work but one that would have wide spread interest and on which information is needed from all parts of the country. In the fall all members who had worked up anything along that line could announce their titles to the Secretary who would then build the symposium into the program in such a way as seemed proper.

Perhaps at once or early in the year there would be some members who would want to head up certain phases of the investigation and that might be announced in the Bulletin. All observations and notes might be sent at once direct to the interested parties. Sometimes we are not inclined to make use of our own separate observations as being of enough value for publication. Here they might be the very thing to round out valuable researches.

Possibly another object of such work would be the development of more of a community of feeling and acquaintance among the Club members. For many of us we meet once a year and that ends it. It would be rather enjoyable to hunt over our own territory in the common cause. Maybe we would be surprised and happily, too.

Some of us thought Prairie Chickens had all but gone the way of the Passenger Pigeon. But here we saw they had posed as actors for the movies within fifteen miles of Chicago. But a step more and we are almost persuaded that we may believe Henri Fabre's love stories of the insects. Too bad he didn't have a movie camera too. And then discussion brought out the fact that Prairie Chickens are becoming quite abundant again in some parts of Michigan.

But if Grant has peeked at the birds at their courting antics, Baldwin is boldly entering into their holy of holies. He is listening to their heart beats under all kinds of thrills. He gave a wonderful exhibition of his work and let us listen to a Canary's heart beating. As we stood before the amplifier it sounded like a roll of thunder all of a sudden. Some one had opened the door of the dark room where the bird was resting and it registered excitement immediately. Baldwin says a bird's heart goes more than pit-i-pat sometimes. It may beat from 200 to 800 times a minute. It makes the amplifier sound like a loud speaker with lots of static when the bird is roused.

If you get tired of your dog but still want something to tag you around, raise a Ross Goose. Chester K. Brooks, of Cleveland, raised one of these rare birds and it was unutterably distressed when shut up alone. It simply had to have a companion of some kind other than adults of its own species—a dog, a bantam hen, the children, or Mr. Brooks himself. A beautiful little goose, almost pure white, and no one knows where the wild ones nest as yet. But it is up near the north pole somewhere.

They reported progress in banding Chimney Swifts in Chattanooga. Some people never do things in a small way. They have banded 30,000 already. Most people would call that an achievement now.

The fine oil painting just presented to Western Reserve University of Dr. Herrick, who has made the finest study of the Bald Eagle, was on exhibition at the first day's sessions.

It was a happy planning of the program to have side trips out of the central states region. Dr. Van Tyne took us on his expedition to French Indo-China and Mr. Todd took us on a trip up the east coast of Hudson Bay.

Several expressed the hope that Mrs. Taylor's paper on "Pioneers in Economic Ornithology" would be published. She gave much interesting information that is not readily available, some of it gathered at first hand. She came from Berkeley, California, to give the paper.

A WORD OF APPRECIATION FROM OUR TREASURER

Ever since the latter part of December I have been receiving from our members letters enclosing checks and drafts to cover the dues for 1931. They have come from nearly every state in the Union, from Canada, from various foreign countries, and even from one of Uncle Sam's battleships. First I want to thank all of these members for their promptness, thus saving me considerable labor in sending out notices.

However, the thing that has most impressed me is the fact that so many of you have included a letter telling of your appreciation of the WILSON BULLETIN, or reporting some activity in your pursuit of bird lore, or relating some bird banding experience, or other interesting news.

It is impossible for me to acknowledge personally all of these letters, since the Club is unable to provide stenographic help. But I wish in this way to express my thanks, and to assure you that it does my heart good to know that you appreciate the work your officers are doing.

There are many, of course, who have so far overlooked the matter of the 1931 dues. In order to save time and postage, and in order to keep the Club's finances in good condition I hope that all who have postponed sending dues up to now will immediately remit. The March issue of the BULLETIN has been sent to all members, whether delinquent or not; the June issue can not be sent, however, to unpaid members unless an arrangement is made.

Looking forward to another pleasant official year, I am,

Cordially,

W. M. ROSENE, *Treasurer*,

Annual Meetings of the Wilson Ornithological Club

	Retiring President
1914—Chicago. February 5. Chicago Academy of Sciences.	
1914—Chicago. December 29-30. New Morrison Hotel	T. C. Stephens
1915—Columbus. December 28-29. With the A. A. A. S.	T. C. Stephens
1916—Chicago. December 27-28. New Morrison Hotel	T. C. Stephens
1917—Pittsburgh. January 1-2, 1918. With the A. A. A. S.	W. F. Henninger
1918—No meeting on account of the exigencies of war	M. H. Swenk
1919—St. Louis. December 29-30. With the A. A. A. S.	M. H. Swenk
1920—Chicago. December 27-28. With the A. A. A. S.	R. M. Strong
1921—Chicago. December 26-27. The Field Museum	R. M. Strong
1922—Chicago. October 26	T. L. Hankinson
1923—Cincinnati. Dec. 31, 1923-Jan. 1, 1924. With the A. A. A. S.	T. L. Hankinson
1924—Nashville. November 28-29-30. Peabody College	A. F. Ganier
1925—Kansas City. December 28-29. With the A. A. A. S.	A. F. Ganier
1926—Chicago. November 26-27. Chicago Academy of Sciences	A. F. Ganier
1927—Nashville. Dec. 30, 1927-Jan. 1, 1928. With the A. A. A. S.	Lynds Jones
1928—Ann Arbor. Nov. 31-Dec. 1, 1928. Museum of Zoology	Lynds Jones
1929—Des Moines. December 27-28. With the A. A. A. S.	Lynds Jones
1930—Cleveland. December 29-30. With the A. A. A. S.	J. W. Stack